The Builder.

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Transactions of the Birmingham Art Congress.

THE volume of the Transactions at the Birmingham meeting of the National Association for the Advancement of Art has been issued,* and if somewhat less voluminous than its predecessors, is as well worth reading in regard to matter and literary style, for the most part at all events. It has now we believe been decided (as we recommended from the first) that the Association is not to make a practice of meeting every year, and there will be no meeting this year. Art is not like science, which has its new discoveries annually, giving fresh matter for the British Association to expound upon every year; and the attempt to hold the Art Congress annually would probably have resulted in a good deal of repetition of the same sermons each year. So far, however, there can be no doubt that the Congresses held at Liverpool, Edinburgh, and Birmingham have done a good deal to stir up artistic enthusiasm in the neighbourhoods in which they were held, as well as elsewhere, while the volumes recording the transactions of the three meetings remain a permanent record of the opinions of a good many gifted men upon important topics connected with art, and include a considerable amount of really interesting reading, and one essay at least (the paper by Mr. Holiday on "The Figure in Design") which touches the highest point of philosophical art-criticism.

As may be remembered, Education in Art was suggested as the key-note of the Congress. There are a good many papers in the collection which do not bear very directly on that subject, but we may keep it in mind in considering the contents of the volume, and the light which they afford on that subject.

No papers in the volume are more noteworthy for their sound sense and excellent literary form than the two by the President on that occasion, Mr. J. E. Hodgson, R.A.; the general presidential address, and the address to working men on means of self-education, under the title "Open Sesame: how to unlock the treasure house." For its sound sense, its breadth of view, and the kindly feeling which pervades it, this paper is well worthy the study of all the more intelligent of our working men, and those who wish to be among the more intelligent. It is a sketch, eloquent and picturesque in style, of the varied interests and associations that cluster round the study of history and geography, of the knowledge of past events and distant scenes, with some practical suggestion as to the amount of really useful and instructive reading which may be obtained by a very little time given daily to the reading of well-selected books. This is not art-education in a direct sense, but it leads to it, to that general opening of the mind and quickening of the imaginative faculty which is the necessary condition for an intelligent love of art. Turning to the presidential address, which is more directly concerned with the subject, we find Mr. Hodgson noting as the great want of the present day in art education the neglect of *design* as opposed to mere drawing. Design, which is the fundamental groundwork of all the plastic arts, is treated as a specialty, "a thing interesting and important to manufacturers of paper-hangings, of fenders and fire-irons." We want to see the spirit of design imparted to all artistic work. In regard to painting in its higher forms, Mr. Hodgson deprecates the materialistic tendency of the day, the mere painting of objects that are picturesque. Of what use, he asks, is Italy to us, with her precious relics of antiquity, her painted walls, her shrines and altar pieces, her burning skies, "if all the artists bring back from her is a portrait of the model who sits on the steps of Rome waiting for hire, or the Venetian grisette who strings beads or flirts with her lover the gondolier? . . . . It is a *reductio ad absurdum* of art education to select the cleverest student in your Academy to send him to Italy that he may study Michelangelo and Raphael, and to find that when he returns he paints a picture inspired by Fortuny." It requires some courage in these days for a painter to say this, but it certainly needs to be said, and pondered on. The mere aim at the piquant representation of picturesque groups, so popular at present, is killing out the higher artistic thought which, whatever the materials used, constitutes the essence of design. We can recall at this moment a single picture exhibited at the Academy a good many years ago, by a gifted French artist (Madame Henriette Brown); it had some such title as "The Ducat," and represented simply an aged man in a long cloak seated at a table and examining a piece of gold. The subject could hardly be slighter; what fixed it in the memory as a mental interest not to be forgotten? The quality of design; the fact that the thing was painted not merely as a study from life of an everyday figure, but as an artistic thought carefully worked out, which was a complete whole in itself, and from which everything was excluded which could interfere with its unity and completeness of expression. It is difficult certainly, to define such a quality in words; it is rather to be felt than expressed; but it is the quality which makes a *picture*, as distinct from a mere painting. It is the want of this quality that we feel in that in many respects able painting of "The Doctor" in the present Academy: the subject is of great interest and pathos, and it is pathetic in some sense, as the real scene would be pathetic, but it is a realistic representation, not a picture in the intellectual sense. The other sick-room painting in the Academy, "The Crisis," less well painted in mere execution, less realistic in detail, is a superior work from the presence of this quality of design, of the intention to represent not merely the pathetic fact, but the fact viewed from the standpoint of design, the working out of the thought in subordination to a prevailing artistic aim. "The Doctor" probably counts fifty admirers for one who is brought up by "The Crisis," simply because the majority of picture-seers of the day, in this country, look only at the facts of a picture, not at the design. It is this quality of design which makes the real greatness of the works of the great Renaissance painters. In Titian's "Bacchus and Ariadne" it is not merely the beauty of separate figures that keeps us before it, or the richness of colouring, it is the unity of the whole conception, every part in relation to the whole thought, which

* Transactions of the National Association for the Advancement of Art and its Application to Industry. Birmingham meetin 1890. London: 22, Albemarle-street; 1891.

makes an impression on the imagination like that of a great piece of music, an impression not the less powerful because it is nearly indefinable in words.

It is more easy to define and distinguish design in regard to merely decorative work and utensils. In regard to this part of the subject Mr. Hodgson suggests that in endeavouring to bring the artist, and artistic perception, more in touch with industrial working, we require to decentralise the administration of official art-teaching in this country. He characterises the Department of Science and Art, which has its headquarters at South Kensington, as "a huge and intricate piece of political machinery." It may be fitly described as such; and though the best intentions pervade it, though it has professedly endeavoured to foster the spirit of design in industrial art, it is really becoming a kind of huge national mill for grinding down to the same pattern whatever of artistic ability may be found among its thousands of students of first, second, and third "grades," and feeding them with "national medals" and "national book-prizes." The work of the Department has been well meant and has promoted and popularised the study of drawing, though not of much that can really be called "design," but practically it is becoming an enormous school of artistic mediocrity. Mr. Hodgson's proposition is that independence should be left to local masters, who may discern and foster special talent among their own students. They can discern it now, but they can do nothing to make the best of it, to draw it out, or to put the possessors of it in the way of acting on the manufactures of their own neighbourhood. All is thrown into the "graded" mill of South Kensington. This cannot go on; and probably the reform suggested by Mr. Hodgson, though it may have its difficulties of detail, is one the necessity of which will be felt, before long, too strongly for it to be resisted or postponed.

The papers which were read on the subject of National and Municipal Encouragement of Art touch on a point of the greatest importance to England. It is of little use to foster artistic genius by even the best system of artistic education (if we had it), unless there is opportunity provided for the artist to exercise his gifts for the good of the nation, and for the securing of reputation and a respectable means of living for himself. National education in art ought to presuppose national encouragement of art. Of this we have in England as nearly as possible nothing. Most of the wealth expended on art in England is expended by private persons. The State and municipalities are not only indifferent on the subject, they are practically adverse to it. No form of expenditure is more deliberately checked and opposed in our chamber of legislature, more sharply criticised, than expenditure of money on works of art. It is generally spoken of as if it were a foolish or even immoral waste of public funds. This fact is touched upon forcibly by Mr. Rathbone, in his presidential address in the section devoted to this portion of the subject. He contrasts the treatment of art in this respect in France and England. In every recurring Salon, he observes quite truly, "the visitor must be struck by the number of pictures labelled as commissioned or bought by the Ville de Paris;" with a considerable number, we may add, commissioned or purchased by the State. Readers of our monthly "Letter from Paris" can hardly have failed to observe that some part of every letter, often a considerable part, is occupied in the description of works of art commissioned by the State or by the Municipality of Paris. The list seems endless—artists, sculptors more especially (the class of artists most peculiarly neglected in England), are continually receiving important commissions for public works, statues, monuments, decorative paintings for public buildings. Not a new Mairie is opened in a suburb of Paris (besides a good many in the provinces) without a competition being opened shortly after for its decoration by high-class works in painting. The best side of art competition comes out in such cases. The artists compete for public favour and public fame, not merely for the official reward of their labours. The effort of competition stimulates them to do their best, and even the losers gain something besides the spur of emulation; the designs are publicly known, exhibited, talked about, and the artist who takes a good place, even if not the best, has gained a certain public reputation which is an encouragement for the moment, and may be of real value to him in the future. In England a public competition for a Government commission is so rare that it is quite an event. It is fair for architects to admit that it is a more frequent event for them than for sculptors or painters. For the latter it is really non-existent, and for sculptors exceedingly rare; and when such an event does occur, the competition is generally so grossly mismanaged that the prevalent feeling is that it would have been better let alone. The reason why there are a certain number of architectural competitions organised by Government and by municipalities is not, indeed, that these bodies care one straw more for architecture than for sculpture and painting—they care, if anything, less; but buildings are required for practical reasons, and competition is regarded as affording the best chance of getting the most for their money; commercially, not artistically. The state of blank indifference on this subject among public bodies in England has become so much a matter of course that we almost fail to realise it till we institute a comparison with France. Then indeed we must be forcibly convinced of our national apathy and indifference to art.

It may be said that the private expenditure on one art, painting, is very considerable in England; and so it is. It has become the fashion to have a taste in pictures and to possess good examples of the work of eminent painters; good pictures command a very high price now, and some painters have prospered much by the sale of their works. But this is not the same thing, has not the same wide and stimulating influence on artists or on the public, as is exercised by commissions from public bodies. In the first place, the picture purchased by the private owner disappears from public view, and is seen only among his circle of friends; it therefore loses most of its educational influence on the public. But the more serious drawback is that the private owner cannot generally give opportunity either for the monumental scale of work or for the class of subject which the decoration of public buildings or the filling of public galleries gives opportunity for. This latter point, as to subject, is very well put by Mr. Rathbone. Pictures of great events in national history, of great tragedies or triumphs in human life, which are of the deepest interest in themselves, may nevertheless hardly be suitable subjects for merely hanging in private houses. It is one thing to study a picture in a public gallery, another to live with it in your sitting-room. "Othello" is a great tragedy for the public stage; one would hardly suggest it for private theatricals. Added to this there is the consideration that it is only in large public buildings that a painter can have the opportunity of painting in a large and monumental style, and in such a manner as to make his work part of a monumental whole. These considerations of course apply in nearly the same sense to sculpture. English sculptors are absolutely longing for the opportunity of applying their gifts to the decoration of public buildings, but they hardly ever get a chance of it. The commission to a sculptor (Mr. Mullins) a few years ago to execute a large group of figures for the pediment of a public building at Preston was a kind of phenomenon in the annals of modern English art; and the attempt to engage Mr. Lee to carry out the long-neglected sculptural decoration at St. George's Hall met with such dogged opposition in the Liverpool Town Council that the partial continuation of the work was only secured by the spirit and liberality of Mr. Rathbone, whose address we are discussing. An occasional Government commission for a monument to an eminent man generally goes no further than a portrait statue on a small and insignificant pedestal. As long as this national apathy towards, we might rather say opposition to, the public employment of artists on public works exists, it is impossible that the best can be made of English art, either for the artists or the people.

Architectural education is treated from two opposite points of view in the presidential address by Mr. Jackson and in the paper by Mr. Aston Webb; the former objecting to anything like an official system of examination for architects, the latter upholding it, and speaking of the Institute pass examinations as having had a good and stimulating effect on students of architecture. Mr. Jackson's position is that architecture is an art, and that you cannot examine in an art, and may only end in formally "passing" as architects men who have no art in them. The question, to which we have before referred frequently, is a difficult one; but on the whole we cannot doubt the truth of Mr. Webb's conclusion that the Institute examinations have had a beneficial effect. They have encouraged and are encouraging more systematic study on the part of young men. The objection taken to them by those who specially uphold the artistic view of the architect's work appears to arise partly from a forgetfulness of the fact that the basis of architecture after all is the science of building, which is a very complicated one, and that architectural art consists in the development of plan and construction as well as in the sculptural or other decoration of a building. It is not only undesirable but unsafe that this side of the art should be neglected, and we are rather disposed to think that some of the defenders of the purely artistic theory of architecture are not as well up in its scientific side as they might be, and that in fact they ignore it (sanitation especially) as something which is distasteful to them; and that is not a satisfactory way of regarding architecture. Nor, on the other hand, can it be regarded as a necessary consequence that a man should cease to be an artist in architecture because he understands strains and drains. The Institute is merely desirous that membership of its body should pre-suppose a certain minimum of practical knowledge. Upon that as a foundation there may be the freest possible scope for the development of artistic individuality and character; but the practical side is the basis of the whole. It may be questioned too, whether, like the painters complained of by Mr. Hodgson, we are not now in some danger of losing the art of real design in architecture in favour of the picturesque, in this country at least. That the picturesque in this sense does not commend itself as a quality of architecture to all others in the same degree we get a hint from the awards in architecture at the Berlin Exhibition, where some of the most picturesque English architects of the day, whose drawings are universally admired for this quality both in regard to design and execution, have been put off with "second mentions" at Berlin. Considering what modern German architectural design is like (for the most part), it may be thought that this piece of practical criticism is not of very much consequence; but it serves to remind us that the mode of architectural design and drawing which is considered very picturesque in this country may not strike other people in the same way; or it may be that the German jurors withheld the higher honours from the architects referred to from an opinion that their designs were unpractical in plan or in general style. It is also possible that the Germans were right in thinking so, unpalatable as the suggestion may seem. We should not go to them for ideas of picturesque architecture, certainly; in fact, anything more terrible, æsthetically, than a German "picturesque" villa it would be difficult to imagine. But the German architects are very practical men, and it may be useful to be reminded by their verdict that

the picturesque in architecture, even when it really is picturesque, is not everything.

Among other papers in which education is touched upon is Mr. Brett's curious and partly paradoxical performance which raised much opposition at the time, but which has a good deal more truth in it than was recognised by some of his audience when it was read. His position is that technical training in art from another artist is of no use whatever to any one; that each learner finds out best for himself what he can do with his hand and how he can do it, and to attempt to impose the manner and style of a master on him is useless if he has no genius, and worse than useless if he has. Mr. Brett contends that what artists require in the way of teaching is scientific training, scientific knowledge, to enable them to understand the nature of the things they want to paint: knowledge of anatomy, of geology, of mechanics, of optics, so far as such knowledge affects the appearance of phenomena and their representation (this is not precisely Mr. Brett's wording, but our own way of putting it); the power and manner of representation they acquire by their own experience and instinct, being given merely the opportunity of practice and of the study of fine examples. He says:—

"We have one or two living men who have never been surpassed in their own line in any age, and who were fellow students of mine at the Academy. I can assure you that they had no systematic training whatever, they only picked up a hint now and then—by asking for it. In those days the Academy, very wisely as I think, went on the principle that if it gave its students the opportunity of regular and undisturbed study, and put before them unquestionably good examples of the art of the past, and if they visited the schools in turn, so that they might be consulted by any who wished for advice, they had done all that was necessary for students who had naturally good abilities; and for the dunces there was no harm done."

This really seems to us to be very much the simple truth of the matter, and it will be observed that it falls in with the idea put forward by the art party in architecture about architectural training; only their mistake is that while recognising one-half of the truth, that artistic feeling and touch cannot be taught, they ignore the other half, viz.: that scientific knowledge can be taught, and is very necessary. Mr. Brett's view in regard to painting is exactly what we wish to urge in regard to architecture. Scientific knowledge is necessary, and can be imparted, and its acquirement can be tested by examination. Let us see to the scientific knowledge, and leave the artistic feeling to develop itself unhampered. Mr. Jackson and his following assert that the Institute of Architects has established examinations in architecture in which the very thing which differentiates an architect, the artistic treatment of buildings, is omitted. Mr. Brett, who is certainly as much of an artist as any architect of the day, denies that art can be taught to all, but the scientific knowledge necessary as a basis can be and ought to be taught. If this is the case in regard to painting it is more emphatically so in regard to architecture, which admittedly is based on practical requirements. We commend Mr. Brett's essay to the attention of the Institute of Architects, as well as to that of their opponents. To the former he is an ally from an unexpected quarter, to the latter he may suggest a view of the subject of art teaching which seems to have escaped their notice.

The English Iron Trade.—The English iron market continues inactive, and no improvement seems probable in the near future. What few changes there are in quotations are chiefly on the wrong side. There is rather more business doing in Scotch warrants, but makers' iron is very quiet. Middlesbrough pig is depressed, and mixed numbers of Bessemer iron in the North-west are 1s. lower. Manufactured iron generally is in slow demand, but manufacturers have been holding out for better prices, and the sheet-iron trade shows an improving tendency. Welsh bars, however, have been reduced 2s. 6d. There are more inquiries in the market for tin plates. The steel trade remains dull. In old materials, although the tone is quiet, flange-rails are slightly higher. Shipbuilders and engineers are still in fair employment.—*Iron*.

RECENT EXCAVATIONS AT SENDSCHIRLI.

In a recent issue we called attention to some of the most striking results of the work carried on at Sendschirli under the auspices of the Oriental Committee. A fuller account has now been published in the *Berliner Philologische Wochenschrift* (July 18), and as the new details given are largely architectural, a *résumé* of the chief facts will be of interest to our readers. First and foremost, we have to alter our spelling; the learned have determined that the strange sounds made by the native in naming this town are better represented by sch than by j; so we bow to the mandate, and henceforth write with the *Wochenschrift* Sendschirli, in place of Sendjirli.

The credit of calling attention to the site belongs to Dr. Puchstein, to whom the study of Asia Minor antiquities already owes so much. Information about remains at Sendschirli came to his ears when he was working at Nemridagh, in 1882. In 1883 he visited the site, and saw at once that it was a fine and almost untouched field. He stated his views in a report, but lack of funds prevented immediate research. The Oriental Committee was, however, formed shortly after, and the excavations began under the direction of Messrs. Humann von Luschan Winter and Koldewey. The result, though it failed to realise some hopes entertained, has made some quite unexpected additions to science. The results were placed before the public at a meeting held in Berlin on June 10, and these results are substantially as follows. We omit, of course, all details of the important lion sculptures, of which we previously gave an account.

Sendschirli stands on a hill which rises at a steep incline from S.-W. to N.-E. The levelled space at the top is very limited in extent, and is occupied entirely by the palaces of successive rulers, the buildings showing manifest signs of enlargement and alterations. The earliest settlement was at the highest point of the hill at the north-east. The most recent dated about 730 B.C. The gates of the city wall are on the exposed side of the city, where the hill slopes down into the plain. The traveller who enters the principal gate sees almost immediately before him a second entrenchment wall, defended by towers and entered by a second gate. The lower portion of both gates were adorned by sculptural reliefs. Half of these have gone to Constantinople, half are in Berlin. It is conjectured that there may have been a third wall, with a third similar gate, but the excavations have not yet been carried far enough to make this certain. At the foot of the hill outside the fortified citadel lay the town; this again was surrounded by a wall, or rather a double wall, for there are two concentric circular walls, built with absolute mathematical precision. The diameter of the outer circle is 700 mètres, and the space between the inner citadel and the outside double walls is from 200—250 mètres. The two outside circular walls are strengthened with a hundred buttress-like supports. There might be some hesitation as to whether to call these supports actual towers or rather buttresses, but a reference to the plan of fortified cities in "Layard's Nineveh" decides the question in favour of the term "towers." It is, in fact, in connection with the plans of Assyrian towns, so well-known from the reliefs published by Layard, that the ground-plan of Sendschirli, now laid bare, has such special interest. The system is identical. The circular tower, where the inhabitants in their tents dwell, protected by the outside wall, and by the fortress within, and in this safe shelter carry on all their daily occupations. We have the same walls, the same system of numerous protecting towers, the same central citadel. Oval towns, and towns built in a parallelogram, with rounded corners only occurred later. Very frequently the designs in the sculptured reliefs depicts the siege of such a circular town. It is noticeable in these relief pictures that the outer wall is only half as high as the inner, and probably this was the case at Sendschirli. From the reliefs it is concluded that the upper portion of the towers, which is jagged like a coarse saw, were of wood. In one case the top of the tower is represented stuck all over with the arrows of the besiegers, but this may be only the lively fancy of the artist. Dr. Baumeister (the writer of the report) holds that the Sendschirli towers taken in conjunction with the representations on the reliefs, solve the question respecting the buttress-like supports at Hissarlik, and solve it in favour of Dr. Dörpfeld's view that they are genuine towers, and not merely buttresses for strengthening the walls. The lower tower is approached by three gates, each flanked by two towers. The outside wall itself has ninety-four towers. The principal door was due south, and led direct to the inner citadel.

These details leave no doubt as to whence a system of fortification so purely artificial must have sprung,—manifestly Greece, with its abundant steep hills, each one a natural Acropolis, could never have been the home of so complex a system. It is to the East we must look, the land of plains and gentle slopes of artificial plateaus.

Turning from architecture and topography to the character of the masonry employed, Dr. Koldewey states his belief that all the walls were built of unburnt brick on a foundation of stone. The wall above ground has been strengthened by a sort of framework of wood, set crossways. There is no doubt that this has been the case, for where the wall has been burnt, the holes where the wood stood are clearly visible, and remains of charcoal are still to be found. The wooden supports varied much in size in the main walls, which are from 3 mètres to 6 mètres thick; they are large, substantial beams in the smaller walls; they were never slender poles. As to the history of the town, Dr. von Luschan made the following statement:—Town and citadel alike were destroyed about 550 B.C., possibly by a people of foreign, unknown origin, who have left their traces not far from Sendschirli, in a Cyclopean fortress, built on a rock, at about an hour and a-half's distance. This fortress has nothing whatever that is Oriental about it. Since the ruin of Sendschirli, the site seems to have been constantly occupied, but only by small, unimportant villages. As to the smaller objects discovered, they have already reached the number of 3,000. Most interest will probably attach to those that are closely analogous to objects found at Hissarlik; others can, for the present, only be classed as "prehistoric." There is no trace at Sendschirli of a civilisation unacquainted with metals. There has been a great "find" of weights, and some among them are on the decimal system. Further, there are numbers of seals, lamps, urns, terra-cotta moulds, &c., some of local make, others imported probably from Cyprus. The dead seem to have been buried in a crouching position, and in terra-cotta coffins.

The epigraphic discoveries are important, and seem to point to the fact that the Hittites were Semitic people, or rather, as Dr. von Luschan puts it, that they were pre-Semitic, like the Accadians in South Babylonia, but we accept that the epigraphic material supplied by Sendschirli is so novel and so rich that it may well occupy more than one generation of scholars to expound its full significance.

It will require a seven or eight months' further campaign satisfactorily to conclude the Sendschirli excavations. Funds, it seems, are lacking, and as we in England are always being told to look to Germany for an example in archæological manners and morals, it is pleasant for once to read that ourselves and our Palestine Exploration Fund are cited as a model to Berlin.

Intermediate Schools at Ystalyfera.—The Intermediate Education Committee, Ystalyfera, in an open competition for designs for the Intermediate Schools, have selected those of Messrs. J. Buckley Wilson & Glendinning Moxham, architects, Swansea.

NOTES.

THE Report of the Select Committee on the Ventilation of the Houses of Parliament does not propose any change of principle in regard to the ventilation, only some enlargement of the areas of intake and some addition to and alterations of the inlets in special places named, in order either to increase the supply of fresh air at these points or to obviate draughts that have been complained of. These recommendations are we presume the result of observation on the part of those who are daily using the building. The Committee, however, also report that they obtained some evidence on the question of taking the air supply of the Houses of Parliament from a higher level rather from than from the ground level, and that the system was adopted at first, in 1851, and discarded in 1854 for the present system, when the Clock and Victoria Towers, which up to that time had been used as down-cast shafts for the admission of fresh air, were altered so as to become up-cast shafts for the extraction of vitiated air; but that no specific reason for the change is recorded in the Reports of the Committees of both Houses by whom the subject was considered. This, if so, is an odd omission in the reports in question. It is to be presumed that the ventilation was then on the *plenum* system, and that the *vacuum* system was substituted. There were perhaps difficulties then in the economical carrying out of a *plenum* system for so large a building which would not exist now. The up-cast system of extraction by heating is no doubt by far the most economical that could be employed. The entry of air to supply that which is thus drawn away may under certain conditions of the atmosphere become rather sluggish, and this is (or was) practically admitted in the Houses of Parliament by the provision of two propulsion fans for use when found necessary or desirable. The system of drawing the fresh air down the towers, to be efficiently carried out, would mean depending on mechanical propulsion entirely, but there is no difficulty about it; it is a mere question of expense. Considering how low the Houses of Parliament stand, we have no doubt that purer air would be obtained from the top of the towers: and if the time should come, as it may, when it seems necessary to entirely recast the ventilating mechanism of the Houses of Parliament, the matter ought to be considered. There may be a question whether the *plenum* or the *vacuum* system is the most suited to a debating chamber. There is no doubt the *plenum* has an acoustic advantage in a theatre, where it is desired that all sound should travel one way; this does not apply to a debating chamber, unless it is desired that all sound should travel towards the reporters. The *plenum* system is more liable to cause draughts in the admission of fresh air, unless very careful precautions are taken against this. On the other hand it gives much less occasion for draughts from the occasional opening of doors, as the pressure of air in the chamber is slightly in excess, and there is less tendency to the sucking in of air from accidental openings.

THE group of Provisional Order Bills, dealing with the rates and charges of the principal English railways, were read a third time in the House of Commons on the 24th ult., but not until a division had been taken upon an amendment moved by Mr. P. Stanhope, to the effect that the conclusions of the Select Committee did not afford a final or equitable settlement of the question. Of course, Sir Michael Hicks-Beach urged the House to decline to entertain this amendment, as its adoption would have practically nullified much of the labours of his Department in connexion with this subject for the last two years. The President of the Board of Trade was supported by 130 members, but as 64 votes were recorded in favour of Mr. Stanhope's resolution, it must have been apparent to the House that the Select Committee have failed to satisfy a very large section of the trading community. The representatives of the timber trade, in particular, have consistently opposed some of the recommendations of the Board of Trade and the Parliamentary Committee, and they took a final opportunity of endeavouring to obtain some modifications, but without much success. Another unsuccessful attempt was made to improve the position of lime, by classifying "lime in bulk and loam" with "limestone in bulk." Various other "articles, matters, and things" were brought under discussion, "the main line of Parliamentary traffic being blocked,"—to quote the *Daily Telegraph*,—"by a prolonged dispute upon the cost of carrying hoop-steel, cantilevers, caissons, man-hole gratings, curry-combs, powder-flasks, saddle-trees, and tin-tacks." It has been the fashion from the very commencement of the proceedings originating under the Act of 1888, to thus take advantage of the miscellaneous character of the merchandise dealt with, for the purpose of fantastically grouping together in one catalogue widely differing articles, and the somewhat dry discussions at the meetings of the various associations have been frequently enlivened in this way. A tragic incident marked last Friday's debate, Sir Charles Foster, who has represented Walsall for nearly forty years, being taken suddenly ill after seconding Mr. Stanhope's motion. The Hon. Baronet has been in failing health for some time, and was apparently overcome by the latterly unusual exertion of taking a prominent part in debate. He never recovered from the seizure, and died on Sunday evening, and another name has thus to be added to the list of our senators who have died in harness.

BESIDES large gold medals and so-called small ones, the jury of the International Art Exhibition at Berlin have given diplomas, first-class commendations, and second-class commendations. First-class commendations in architecture have been gained by four German exhibitors, Bruno Schmitz, Ende and Boeckmann, and C. H. Seeling, of Berlin; and G. Hauberisser, of Munich. Three second-class commendations in architecture have been given to English architects (Professor Aitchison, Mr. E. W. Mountford, and Messrs. Ernest George and Peto); that is to say, they have been awarded; whether the architects concerned have accepted them is another question; three have been given to Germany, two to Austria, and one to Russia. As stated in our last, the only large gold medal for architecture was awarded to Mr. Waterhouse. Eighteen other large gold medals were given, fourteen to painters, three to sculptors, one to an etcher. Among the painters were Mr. Stanhope Forbes, and Mr. J. J. Shannon. No fewer than seventy-three small gold medals were awarded; England was represented in this list by Messrs. M. Stone, Colin Hunter, J. Pettie, and Onslow Ford. Two of the diplomas given were awarded to Sir F. Leighton and Sir John Gilbert; and under the heading England we find also the names of Mr. Poynter, Mr. Abbey, Mr. Alfred Parsons, Mr. Alfred East, Mr. J. Aumonier, Mr. Yeend King, Mr. E. A. Waterlow (besides those of the above-mentioned architects), in the list of second commendations, and in the list of first commendations that of Mr. W. B. Richmond.

MR. CORFIELD, as Medical Officer of Health for the Parish of St. George, Hanover-square, in his last monthly report draws attention to the probable inaccuracy imported into statistics of mortality and disease rates by the fixing of the last census not only on a Sunday, but on Easter of all other Sundays, when numbers of Londoners are away from town. The last census gave the enumerated population of the parish at 78,362, as against 89,758 in 1871, and 89,753 in 1881; and Mr. Corfield has no reason to believe that there has been a decrease of 11,211, or one-eighth of the population of the parish, since 1881. He has accordingly based his returns on the census of 1881, and will continue to do so until the statistics be set right at the next census, which he hopes will be taken in 1896, when it is further to be hoped the day for taking the numbers will be selected on a more rational principle, and not a time when so large a proportion of persons, not only in London but elsewhere, have temporarily left their usual residences.

THE contest as to the new main line promoted by the Manchester, Sheffield, and Lincolnshire Railway has now been transferred to the shareholders' meetings. Sir Edward Watkin has somewhat angrily accused the Great Northern officials of bad faith, and the latter will, no doubt, retaliate. Accusations of this kind do not advance a cause; if the scheme in question is to be examined by the House of Commons again next session it must stand or fall on its merits. It would be more businesslike and more dignified of Sir Edward Watkin to say nothing more till another Committee has investigated his Bill. Reasonable men will prefer to accept the decision of the very capable and careful Committee which sat for so long this year until, at any rate, an equally careful and capable body has gone again into the matter and decided differently to their predecessors. Even then, it may be that the first Committee would be in the right.

A NEW form of nozzle for steam-jets used for ventilating purposes has been patented by a Mr. Granger, and has been taken up and is now being sold by the Banner Sanitation Company. The especial point about Granger's jet is that the steam, instead of forming a solid jet, issues from the nozzle through two circular slits, the combined area of which in a medium-sided nozzle is about one-sixth of a square inch. Thus a comparatively small amount of steam at a low pressure of about 5 lb. per square inch serves to induce a respectable current. Under the conditions for which steam-jets are admissible as air-motors in ventilation, Granger's patent steam nozzle is a reliable and efficacious instrument; but it is, of course, like most jets, somewhat noisy in operation. Such a jet is most suitable for use in factories and workshops where steam-power is used, and where the drawback of noisiness is of small importance.

WE understand that further schemes are about to be made in pursuance of the Union of Benefices Acts, 1860 and 1871. It is proposed to unite the parish of Holy Trinity, Minories, with that of St. Botolph, Aldgate, and to unite those of St. Botolph, Billingsgate, and St. George, Botolph-lane, with St. Mary-at-Hill and St. Andrew Hubbard. The parish church of St. Andrew Hubbard, or Hubbert, in Billingsgate Ward, was consumed by the Great Fire, after which its site was taken for the Weigh House, at the corner of Love-lane and Little Eastcheap;* that of St. Botolph, which stood hard by, shared the same fate in the fire, but its churchyard was preserved. The sites of these two churches are not laid down in the plan contained in Mr. W. Niven's "London City Churches," reproduced in our columns on January 14, 1888. The Metropolitan and District Railways Bill of 1879 threatened to involve the destruction of St. Mary's-at-Hill, between Love-lane and St. Mary-at-hill. This, an ancient foundation and formerly styled S. Maria ad Montem, stands on the site of one that had two aisles, transept, and western tower, and which the fire did not completely destroy. Margaret Beaufort, "my lady the King's grandam," gave 20s. to the building of one of the aisles, for the south aisle, *circa* 1500, they took the kitchen site of the Abbot of Waltham's "inn."

* The northern side of Weigh House-yard was pulled down for a widening of the street in the autumn of 1883; and the (old) Weigh House Chapel was closed in March of that year. See our "Note" of May 25, 1889, and "Building Improvements in Eastcheap and Tower-street" of November 8, 1884.

The old stone tower and turret, nearly 100 ft. high, is, we take it, delineated in the "Londinum Feracissimi Angliæ Regni Metropolis" of Braun and Hogenburgh's "Civitates Orbis Terrarum," dedicated, 1572, to Maximilian II., nephew to the Emperor Charles V. It was rebuilt, of brick, about 110 years ago. Of Wren's reparations, executed at a cost of 3,980*l.* 12s. 3d., the eastern end, carrying a bracket clock, but disfigured by a broken pediment, remains, as also his interior,—the latter having a cupola, and being somewhat after the manner of his St. Stephen's, Wallbrook. It is adorned with some fine contemporary carving, repaired, with additions to an almost lavish extent, by Mr. W. Gibbs Rogers in 1848-9. The organ, since enlarged, was built at the same time by Hill. St. George's, Botolph-lane, was repaired in 1884: we gave a short account of the church in a "Note" on December 20 last. It is curious to observe how numerous were the churches in this quarter of the town. A well-known firm of tea and fruit brokers, established in 1747, have for long occupied the old house, 47, Botolph-lane, also numbered, lately, 14, Eastcheap, and we have seen it stated that Sir Reginald Hanson, Bart., M.P., elected Lord Mayor in 1886, carried on his business in the house in Botolph-lane wherein he, his father, grandfather, and great-grandfather were born. Accounts of St. Botolph's by Aldgate,—one of the four churches of London at the gates, which are so dedicated,—and of the repairs made there by Mr. Bentley, will be found in our columns, under "Notes," for April 13 and July 13, 1889, and of Holy Trinity, Minories, on January 9, 1886. Mr. H. B. Wheatley, in his "London Past and Present," 1891, perhaps out of his somewhat too great respect for Peter Cunningham, repeats the latter's mistake of confounding this church, formerly an abbey of St. Clare nuns, founded in 1293 by Edmond, Earl of Lancaster, with Queen Mathilda's priory of Holy Trinity by Aldgate. Stow clearly distinguishes between the two foundations and their situations.

WE read in the *Daily News* that the Middle Temple library will be closed during the long vacation for the making of some alterations to the roof and other parts of the fabric. The library-building, which comprises two lower stories of chambers, was begun in the summer of 1858 and opened on October 31, 1861, the works having been delayed by a strike. Standing upon a site,—at that time close to the riverside,—bought by the benchers as an addition to the gardens, it is constructed, externally, of Bath stone, after the designs of Mr. H. R. Abraham, architect; the carving is by Mr. Ruddick; and measures 117 ft. by 55 ft., and 110 ft. in height. The library (96 ft. by 42 ft.) has a hammer-beam roof, rising at the apex to 70 ft. above the floor, with eight principals of open tracery. See our columns of August 15, 1860, for plan and view.

THE Free Church at Morningside, Edinburgh, which was erected from the designs of Mr. David MacGibbon a few years ago, and which has been added to from time to time, is found to be insufficient for the accommodation of the present congregation in this rapidly-increasing suburb. The site is fully occupied by the present building, and Mr. H. J. Blanc, architect, who has been consulted in regard to the matter, recommends that an entirely new church should be erected upon a different site. This view appears to have been accepted by those interested, and a suitable site for a new church is to be sought for.

THE prize drawings in the annual "national competition" as it is rather magniloquently called, of the students of art schools in connexion with the department of science and art have been, as usual, on view at the South Kensington Museum. The designs and drawings exhibit much the usual average of merit, the best work on the whole being among some of the designs for decorative work, such as lace, tiles, curtains, &c., and the worst (as usual) are those in the architectural class. In regard to these we can only observe that if the department can secure no higher standard in architectural design than the things to which they award prizes, they had better give up the pretence of teaching architecture at all. There is a silver medal given to a Glasgow student for instance, for a design for a classic building, which is bad in every way, clumsy and heavy in design and defective in drawing. Mr. H. Rimmer, who is known in the profession as a promising architectural student, obtains a silver medal for a quiet and meritorious design for a country church, but then he is put on a level with the author of the more ambitious but ugly and ill-drawn design referred to. Miss Gertrude Lake receives a gold medal for a painting of an interior, and Miss Gertrude Roots for a design for mosaic which has a good deal of merit. Among other bits of decorative work which are meritorious are Mr. L. P. Butterfield's design for tiles (silver medal); Mr. W. P. Belk's designs for decorated daggers and sheaths (silver medal), not very much to the purpose, as we have fortunately given up carrying and using daggers now; Miss Alice Jacob's design for a curtain (silver medal); Mr. G. H. Catt's painted decoration for a piano (silver medal) and Miss Annie Steen's design for a lace insertion (silver medal), which latter is very good. Mr. Patchin receives a silver medal for a good bit of decorative carving in wood in low relief, of which the figures are the weakest portion.

WE have received the first publication, we believe, of the Transactions of the Edinburgh Architectural Association. It consists mainly of records and descriptions of old houses visited by the Association, with some illustrations, and contains a great deal of interesting information. The papers read during the session will appear in the next part of the Transactions.

MR. EASTLAKE writes to the *Times* of Saturday last, in regard to the proposal to build a monumental chapel on the site of the ancient refectory of Westminster, to point out that such a building must shut out a great deal of the light from Ashburnham House. He questions also whether the building would be large enough. That depends very much on how many great men we are going to have, or where we are going to draw the line of definition as to that degree of greatness which justifies interment in the Abbey precinct. Our only feeling in favour of the refectory site is that it is more closely connected with the ancient precinct and therefore preserves more of the prestige attached to "lying in the Abbey." The other proposed building is so little connected with the Abbey that we might really almost as well call it a national Walhalla or Campo Santo and build it anywhere else. Perhaps that is what we shall have to do after all. There seem to be objections raised to every new proposal in connexion with the Abbey itself.

THE STATE OF THE THAMES.—An urgent protest has been sent to the London County Council by the Woolwich Local Board on the condition of the Thames, which is reported to be worse than ever. The Council is at the present time in a difficult position; it inherited from the Metropolitan Board of Works a system of treating the sewage chemically and of carrying the sludge out to sea. A large sum of money had already been expended on the necessary works, but these were still incomplete, and, until a fair trial has been given to this method, it is practically impossible for the Council to embark on the still larger expenditure which may be required. At the present time the Barking works (for the sewage of the north side of the Thames) are in working order, but at Crossness (for the sewage on the south of the river) they are still in course of construction. In the meantime, a great deal of untreated sewage is discharged into the Thames, and it is likely enough that the Woolwich Local Board has some grounds for its complaint.—*The Lancet.*

LETTER FROM PARIS.

THE inauguration of the memorial to Victor Noir, at Père la Chaise, took place last week. It is the work of Dalou, and, it may be remembered, was exhibited at the Champ de Mars Salon in 1890; it represents the deceased in his everyday costume, lying as if dead on the ground. Time has not calmed the feelings which were aroused by the circumstances of Noir's death, and there were some regrettable incidents at the celebration. In the midst of a violent discourse, an actual pugilistic encounter commenced between M. Dalou and a Boulangist orator, and the police had to intervene to restore order. On the other hand, the inauguration of the monument to Danton, on the day of the National Fête, passed off quietly enough, and the public can now contemplate at their leisure the violent and *outré* figure with which M. Auguste Paris has gratified the city.

This is not all, unhappily, for now we are asked to glorify in bronze the execrated memory of Robespierre. A committee has been already formed with the object of erecting a statue in the Rue St. Honoré, where he lived, facing the Church of the Assumption. It is probable the Government, however, will put its veto on this idea.

The opening of the Avenue de la République also took place on the National Fête day (July 14), and M. Carnot traversed officially the whole of the long road on which so much money has been expended At the highest point of the Avenue, near Père la Chaise, M. Alphand has contrived a fine square with green lawns, plantations, and rockeries to hide the cemetery. The works have been conducted by M. Boreux, Ingénieur en Chef des Ponts et Chaussées, who received the Cross of the Legion of Honour on the occasion of the opening. On Sunday last the Minister of Fine Arts inaugurated the monument to Lafontaine. This monument, which has the rare merit of having no political character, is situated on the lawn at Ranelagh at the junction of two avenues, and the bust of the fabulist is surrounded by groups of animals which have a very decorative effect. The sculptural portion is the work of M. Dumilâtre; and M. Frantz Jourdain, the architect, has designed the pedestal.

The Municipal Council of Paris, which has recently opened a competition for a statue to Beaumarchais, has also invited painters to compete again for the decoration of the Hôtel de Ville. This time it is the Salle des Banquets, which affords to the artists plenty of large surfaces; three large ceilings and eight door-canopies. These latter had been commissioned direct to M. Ribot, whose health prevented his undertaking the work; then to M. Vollon, who declined them. Finally the whole of the decoration has been put to competition again as one scheme, which seems a more logical system and more likely to lead to a harmonious result.

While new statues are everywhere being put the vandal image-breaker continues his depredations. The last exploits of this kind have been in the Tuileries Gardens, where several statues have been broken, especially M. Meunier's "Laïs," which had already suffered considerable damage last year. It is curious that the statues placed in the streets are generally respected, and the image-breakers seem to address their efforts by preference to those placed in gardens which are closed at fixed hours and are under special surveillance.

The Salon Exhibition has given place to an industrial exhibition in the same building. Before separating, the "Committee of Ninety" brought forward some important modifications for the regulation of the next Salon. At the Champ de Mars, which is prolonged a little later than the Champs Elysées Salon, the Société Nationale has been able to state in its report that the financial position of the exhibition improves year by year. The receipts, which in 1890 were 172,445 francs, have this year risen to 212,740 francs,—a practical proof that the Parisian public is very favourable to the new Salon. With these receipts, the management is able to look forward to making further improvements next year in the arrangement and carrying out of the exhibition, and also to give travelling scholarships to two painters, MM. Dagneaux and Rosset-Granger, and to one sculptor, M. Alexandre Charpentier.

There is to be held shortly, at the Champ de Mars, an exhibition of Russian products, artistic and industrial, which is intended as a kind of counterpart to the French exhibition at Moscow. It will be opened, as at present intended, on

January 1, 1892, and remain open all that year, in the central dome and galleries adjoining. As there is no provision for warming these great galleries, visitors to this exhibition in the winter will have the additional realism of Siberian temperature.

The Municipal Council is breaking up for the vacation without having decided anything as to the Boulevard Haussmann. It has, however, voted, at its last sitting, the construction of the metropolitan railway. The realisation of the project will lead to an immense amount of work in street alterations, and give a great impulse to trade; and the decision is therefore certain to receive popular approval. The route to be followed is that of the Eiffel Company combined with that of the "Compagnie du Nord," which was described in the *Builder* of July 4. The tubular railway proposed by M. Berlier will be the subject of a separate inquiry.

Since the death of M. Deck, the organisation of the manufactory at Sèvres has occupied the attention of the Minister of Fine Arts, who desires to give a new artistic impulse to the manufacture. M. Bourgeois has just gone to visit the manufactories of Limoges, and M. Henri Havard has been commissioned to present to the Conseil Supérieur des Beaux-Arts an important report on the subject. M. Havard is well acquainted with the subject, and the Council has ratified his report on all points. The suggestions contained in it are as follows:—

1. The maintenance of the Sèvres house as the manufactory of artistic porcelain.

2. The formation of a laboratory for the study of Ceramic art; a laboratory reserved specially for the manufacturing staff.

3. The formation of a school for the decorative application of Ceramic work, combined with a technical school, both intended to receive pupils in the employ of municipalities.

4. The preponderance of artistic direction in the State manufactories, which it is desired to render establishments for education in art.

The Conseil Supérieur is also occupied with the creation, partly by funds to be derived from the sale of the Crown diamonds, of a museum fund for the benefit of the five national museums (Louvre, Luxembourg, Cluny, Versailles, and St. Germain). No decision has yet been taken on this question, in regard to which M. Gonse has been reproached for inviting the Administration to adopt the system of some other countries, of payment for entrance. This would be entirely contrary to the theory of artistic education professed by a democratic government, and for the Louvre especially such a regulation would be a decided step backwards, and would cause general complaints.

There is also a proposal for borrowing in advance, on the value of the Crown diamonds, the funds necessary for the reconstruction of the Ecole des Arts Décoratifs, the building being in a very dilapidated state. It was actually necessary the other day to shore up part of the building towards the Rue de l'École de Médecine, and a prompt decision is requisite. The cost of the repairs is estimated at about 1,500,000 francs, and if the Government authorises the work, the school will be established on the site of the ancient Hôtel Dieu. In the meantime the bust of Ruprich-Robert has been placed in the courtyard of the school, where in the latter years of his life he was a professor.

Thanks to the bounty of individuals the Louvre continues to add to its stores. A few weeks ago M. Moreaux left to it some important Flemish pictures. Since then, M. Rodolph Kaun has offered two curious specimens of French painting of the sixteenth century. The Musée Céramique has also acquired a splendid cup in Persian faïence of the same epoch. There are also waiting for space in the cases of the Salle Campana the archæological curiosities purchased at the sale of the celebrated Gréau collection, which comprise votive offerings found in Greece, statuettes from Egypt, coins and medals from Tarentum, and sculptured fragments found at Smyrna, and which recall the best period of Greek art.

The decorative design round M. Carolus Duran's painting on the ceiling in the Pavillon du Beauvais has just been completed. A large gold bordering brings out the picture forcibly. At the two extremities are genii bearing the arms of France and of the Medici. At the angles is modelled the lily of Florence, and the vaulting-ribs are decorated with the monogram of Marie de Medicis.

The Luxembourg has acquired a fine bust in white marble by Gautherin, the sculptor who died last year, as well as a portrait of Aimé Millet, the sculptor, by M. Bonnat.

The decision of the jury in the competition for the Prix de Rome in sculpture and painting has been given. In painting the first prize has been given to M. Alexandre Lavalley, pupil of MM. Cabanel, Maillot, and Bouguereau. The general quality of the work seems higher than last year. The subject given was "Jupiter entering the house of Philemon and Baucis." M. Lavalley's picture was not a bad work, if a little harsh in colour; the composition is very good. M. Déchenau (second prize) has illustrated the scene well, but oddly exaggerated the anatomical details of his nude figures. M. Etcheverry, who obtained a "2d second prize," is a pupil of MM. Zô and Bonnat, and his colouring has some of the defects of the latter painter, but it is the best-conceived picture of the whole, and merited a better position in the awards.

The first prize in sculpture was awarded to M. Sicard, pupil of M. Cavelier; the second to M. Lefebvre, another pupil of Cavelier,—the subject was "Apollo and the Herdsmen." M. Sicard exhibited a very well-composed model: M. Lefebvre's bas-relief was a little too flat and rather indecisive in execution.

Mdme. Léon Bertaux, president of the "Union des Femmés Peintres et Sculpteurs," is commissioned to execute a marble bust of Mdme. Carnot, the wife of the President.

We hear at the last moment of the death of M. Gaston Guitton, sculptor, who was born at Roche-sur-Yon, and was a former pupil of Rude. He assisted in a good deal of the decorative work at the Paris Opera-house and the Hôtel de Ville. His works have frequently figured in the Salon exhibitions, where he received a second medal in 1857. He was sixty-six at the time of his death.

THE ARCHITECTURAL ASSOCIATION:

VACATION VISIT TO CAMBRIDGE.

Under the guidance of Mr. Edmund Woodthorpe, M.A., a goodly number of members of the Architectural Association paid a whole-day visit to the University of Cambridge, on Saturday last, accompanied by some representatives of the Birmingham Architectural Association.

Reaching Cambridge by an early train, the visitors proceeded first of all to the Fitzwilliam Museum, noticing on their way the Old Conduit, date 1610, removed from the Market-place to mark where the stream from the Nine Wells, Great Shelford, enters the town before running through the streets. A very short time was spent at the Fitzwilliam Museum, which was designed by Basevi, who died in 1845, when the works were continued by Cockerell, and completed by E. M. Barry; the entrance-hall, with its rich and quiet decoration of marble and granite being the chief point of interest architecturally. The members then proceeded to Peterhouse, the oldest of Cambridge Colleges, having been established by Bishop Hugh de Balsham in 1284; no parts of the building of that date are, however, believed to remain, the earliest existing portion having been erected between 1424 and 1466, when extensive building operations were carried out which included the master's lodge and combination room that have been recently restored, together with the dining-hall, by Mr. George Gilbert Scott, jun., and exquisitely decorated by Mr. William Morris and Mr. Burne Jones. The chapel, which was commenced on March 7, 1632, is of considerable interest, and was built by Dr. Matthew Wren, the uncle of Sir Christopher, who became master of the College in 1625. The celebrated master of Peterhouse, Dr. Andrew Perue, who was master from 1554 to 1580, was chiefly instrumental in bringing to Cambridge the water supply from the Nine Wells already referred to. Passing on, the visitors next turned their attention to Pembroke College, founded in 1348 by Mary de St. Paul, daughter of Guy, Count of Chatillon and St. Paul, widow of Ayner de Valence. The chief architectural interest here is centred in the chapel, dated 1663, designed by Sir Christopher Wren, the new buildings by Mr. Waterhouse, and also those in a charming Renaissance treatment by Mr. Gilbert Scott.

Passing along Pembroke-street in order to view better these last, the visitors also came in sight of the New Chemical Laboratory designed by Mr. J. J. Stevenson. As by this time the working out of the programme had over-run the time allowed, our visitors next proceeded to King's College, but finding that the chapel was being used for choir practice, went on to Queen's College, founded in 1448 by Margaret of Anjou, wife of Henry VI., and by her called the Queen's College of St. Margaret and St. Bernard. The old work here is of considerable interest, although the visitors were not able to see the interior of the long gallery, which now forms part of the master's lodge; the new chapel, by Bodley, just approaching completion, contains some excellent detail, and forms the chief architectural feature of the College. Before leaving Queen's the visitors had not omitted to inspect the highly interesting old wooden bridge over the Cam. Returning to King's College, a considerable time was spent in the magnificent chapel, the first stone of which was laid by Henry VI. on July 28, 1446, as part of the foundation of "our College Royal of St. Mary and St. Nicholas." There is considerable doubt as to who designed this remarkable work, it may possibly have been Nicholas Close, who was overseer of the works at the commencement, or Waynflete, whom we know to have been in high favour with Henry VI. The stonework of the building was probably finished by July, 1515, but a considerable amount of work still remained to be done at that date. In 1526 contracts for the windows, which had been begun by Barnard Flower in 1515, were entered into. The names of the men who contracted for these remarkable specimens of glass-painting have been preserved to us; they were: Galyen Hoone, Richard Bownde, Thomas Reve, James Nicholson (Englishmen), Francis Williamson, and Symon Symondes (Flemings). These windows, the contract provided, were to be finished by May, 1531. The remarkable screen and the stalls appear to have been executed between 1532 and and 1536, and there can be very little doubt that Italian workmen were largely employed, certainly upon the carving of the screens.

Leaving King's College, the visitors next proceeded to Trinity College, founded by Henry VIII., 1546, "To the Glory of God, and advantage of the Realm, for the Promotion of Science, Philosophy, Liberal Arts, and Theology." The college occupies the site of the older colleges of King's Hall and Michael House, as well as several hostels. A large portion of the buildings of this college was erected by Dr. Thomas Neville, Master in 1593, who employed Ralph Symons as architect, to whom, therefore, the design of the Great Court, Queen's Gateway, Stone Fountain, and other features is to be attributed; proceeding to the library, the visitors were met by Dr. Sinker, the Librarian, who pointed out to them the chief features of this work of Sir Christopher Wren, who designed not only the building but also the fittings, the carving being executed by Grinling Gibbons. Dr. Sinker was kind enough to point out and explain some of the more notable treasures of the library, and gave an interesting explanation of the manner in which Thorwaldsen's statue of Byron, who was a member of the College, came to be placed in the library. This statue was executed for a committee of the admirers of Byron with the idea of it being placed in Westminster Abbey, but having been twice refused by successive deans, it ultimately found a place in the more suitable home of Trinity College library. Dr. Sinker also accompanied the visitors to the chapel begun in 1556, decorated during the mastership of Dr. Richard Bentley, the carving being attributed to Grinling Gibbons. After visiting the kitchen of Trinity College, the visitors naturally felt an appetite for lunch, which they accordingly enjoyed in the hall of Clare College, which, though containing comparately little of architectural interest is the oldest of Cambridge Colleges, except Peterhouse, and the now banished Michael House, whose site was afterwards occupied by Trinity. The design of the buildings of Clare College, which were begun in 1638, is pleasing from the breaking up of the façade by vertical lines marking the divisions of the interior, as well as by the horizontal lines of the architectural features. The first visit in the afternoon was made to Trinity Hall, where, however, very little time was spent beyond viewing the new work of Messrs. Grayson & Old. The next halt was at St. John's College, begun about 1511, to replace the Hospital of St. John the Evangelist, which had fallen into evil repute, by the executors of Lady Margaret, Countess of Richmond and Derby, mother of Henry VII., who carried out the first court; the second court was commenced 1598, and finished in 1602, the architect being

Ralph Symons, already mentioned in connexion with Trinity College. The third court was erected between 1617 and 1624, and, therefore, shows us the treatment of English Renaissance. The Bridge of Sighs and the stone bridge were also inspected, as well as the new chapel by Sir Gilbert Scott, completed in 1869. Leaving St. John's, a short visit was made to the famous Round Church of St. Sepulchre, one of the interesting series of four round churches built hy the Knight Templars, and their successors the Hospitalers; the others being Temple Church, London; Little Maplestead, Essex; and St. Sepulchre, Northampton. Then was visited the College of St. Mary Magdalene, formerly Monk's Hostel, and afterwards Buckingham College, but refounded as the College of St. Mary Magdalene in 1542 by Lord Ardley, Lord Keeper of the Great Seal and Lord Chancellor. The chief interest of the visitors here was centred in the Pepysian Library. Then passing down Jesus-lane the new Church of All Saints', by Bodley, was visited by the members, who greatly enjoyed the detail and colour decoration shown in the interior. Leaving the church, the visitors crossed the road to Jesus College, founded by John Alcock, Bishop of Ely, 1497, when he suppressed the Benedictine Nunnery of St. Mary and St. Rhadegund, building the hall on the site of the Nuns' Refectory. The chapel to this College is of exceptional interest, being mostly transitional and part of the old Priory Church. The visitors then proceeded to Christ's College, merely glancing on their way at Sydney Sussex College, the architectural interest of which is discounted by the work of Wyattbille about 1803. At Christ's College, founded by the Lady Margaret, who also established St. John's, on the site of an older Grammar College, called God's House, little time was spent, as the excursionists were then becoming somewhat weary; they, however, admired the work of Wren and later work in the Quadrangle, together with the new building by Mr. Fawcett, to whose house they proceeded for tea after a short visit to Emmanuel College, founded by Sir Walter Mildmay in 1584, on the site of a Dominican convent, Ralph Symons being employed as architect, although but a small portion of his work remains. The chapel here is by Sir Christopher Wren. The only other visit was made during the evening on the way to the station to the new Roman Catholic Church, by Messrs. Dunn & Hanson, which has been carried out with very great skill, and richly carved detail based upon some of the best English Decorated work.

The visit to this church completed a very hurried and superficial inspection of the University of Cambridge, which did not even allow a casual glance at some of the architectural features of the town which are worthy of study, such as the University Church, Gonville and Caius Colleges, the Senate House, &c.

THE LONDON COUNTY COUNCIL:

PROPOSED SCHEMES OF STREET IMPROVEMENT.

A SPECIAL adjourned meeting of the London County Council was held at Spring-gardens on Friday, July 24, Sir John Lubbock, Chairman, presiding.

The Water Question.—The Chairman said he was anxious to say one word as to the present position of the water question. Of course the Council was aware that he had introduced a Bill into Parliament in accordance with the powers granted to the Council. He had done his best to carry it through, but, as the Council was aware, the Bill had been blocked. Seeing that the Select Committee on Water reported substantially in agreement with the resolutions come to by the Council on the water question, he ventured to ask her Majesty's Government on the previous evening whether under these circumstances they could give him any special facilities in order that the Bill might be carried through this session. Although he was disappointed with the reply, it was hardly other than he expected at this period of the session. The Government told him they could not give him any special facilities to enable the Bill to go through. Under those circumstances he deemed it right to make that statement, so that the public might know that no blame rested upon the Council for the delay which would occur.

Sir T. Farrer, in reply to various questions, said that 2,000*l.* remained out of the 5,000*l.* voted by the Council for the purpose of inquiries respecting the state of the water supply, and that a considerable portion of the money already expended had been spent in ascertaining the possibility of a new and independent supply, and that the whole question was being inquired into.

The Council then proceeded to resume the discussion on the report of the Improvements Committee.* The report of the Committee proposed several important improvements, including the widening of the Strand, the construction of a new street from Holborn to the Strand, approaches to the new Tower Bridge, and several other schemes, the whole involving an estimated cost of 2,133,625*l.* In the *Builder* for July 18 (pp. 50, 51) we gave the full text of the Committee's report as to the Strand and Holborn-to-the-Strand proposals; and last week (p. 69) we gave a plan showing the course of the proposed new street from Holborn to the Strand. Before reporting the result of the discussion on the report of the Committee, we proceed to give the text of its proposals with regard to other improvements:—

"*Bozier's-court, Tottenham Court-road.*—Early in 1889 an application was made by the Vestry of St. Pancras for the Council to widen Tottenham-court-road at the southern end, and we entered into correspondence with that Vestry and with the Vestry of St. Marylebone with the view of arranging for a joint contribution. Subsequently it appeared that the Central London Railway Company proposed to acquire property at Bozier's-court for the construction of a station. The Parliamentary Committee, after consultation with us endeavoured, but unsuccessfully, to make an arrangement with the Company for the setting back of the station so as to provide for the necessary widening of the road, which would be more than ever necessary by reason of the increased traffic caused by the railway. It should be stated that numerous applications had been made to the Metropolitan Board to carry out this improvement, and in November, 1888, the Committee to which the subject had been referred recommended that the improvement should be done, but the Board decided otherwise. On April 14, 1891, the following resolution was passed by the Council:—

"That the question of the removal of the obstructive buildings in front of Bozier's-court, at the corner of Tottenham-court-road and Oxford-street, which causes a great interference with the traffic, be referred to the Improvements Committee, and that they be instructed to report to the Council as to the advisability of such improvement being included in the next General Powers Bill of the Council."

Before going into particulars of this proposed improvement, it is necessary to say that Bozier's-court is on the confines of two parishes—St. Marylebone and St. Pancras. The whole of Tottenham-court-road save the extreme southern end is in the latter parish, so that while the Vestry is interested in the improvement of the thoroughfare, it is not in a position to contribute, because the land to be acquired is outside its boundary. The Vestry of St. Marylebone, on the other hand, does not feel any interest in carrying out the improvement, seeing that for its own local wants it is not called for. Both Vestries, however, unite in urging the Council to effect the improvement out of the county funds. We consider it hopeless to expect any contribution from the local authorities.

The proposal is to remove the block of buildings to the east of Bozier's-court, and to round off the south-western corner of the court at its junction with Oxford-street, at an estimated net cost of 50,900*l.* As the necessity for this widening is manifest, and as it is entirely occasioned by the large increase of through traffic, we are of opinion that the improvement should be carried out without further delay. It must be admitted that if the block of buildings forming the island between Bozier's-court and Tottenham Court-road be removed, the property on the western side of Bozier's-court will be brought into prominence, and must acquire a largely-increased rental value, and we are of opinion that the owners of this property should be required to contribute towards the cost by means of an improvement rate. We propose that clauses authorising an improvement rate should be inserted in the Bill. It is not proposed to ask the owners to forego more than one-half of the increased annual value of their property, neither is it suggested that anyone should be compelled to pay the improvement rate immediately. Assuming that the tenancy of most of the houses will fall in before the expiration of thirty-three years, which would enable owners then to benefit by the increased rental value, it is proposed that all should have the option of deferring payment for thirty-three years after the completion of the improvement. The scheme will provide, therefore:—

(*a*) That a schedule of the property to be included in the improvement rate shall be attached to the Bill.

(*b*) That owners shall have the right of appeal, as to their respective assessments, to an arbitrator to be appointed by the Local Government Board.

(*c*) That the improvement rate shall commence to be payable on October 1 next following the completion of the improvement.

(*d*) That the improvement rate shall be payable either in a lump sum or by annual or other payments. Deferred payments to carry interest at 4 per cent.

(*e*) That, with the view of accommodating those who may not immediately come into receipt of improved rentals, owners shall have the option of deferring payments and, in such cases of deferred payment, the amount, together with interest—or should any instalment have been paid, the balance remaining unpaid—may be paid at any time, and thus future interest saved, but any balance remaining unpaid on October 1, thirty-three years after the completion of the improvement, shall then be paid.

(*f*) That the Vestry of St. Marylebone shall collect this improvement rate, and receive as compensation the difference between the 3½ per cent. interest which it will have to pay the Council for its loan, and the 4 per cent. which will be charged to owners on deferred payments.

(*g*) That the Vestry of St. Marylebone shall pay to the Council an amount which shall be ascertained to be one-half of the before-mentioned improved annual value capitalised; the Council to sanction a loan for this purpose.

We recommend:—

'That the Council do apply in the next session of Parliament for powers to widen Tottenham Court-road at Bozier's-court, as shown upon the plan submitted herewith, provision being made in the Bill that the owners of the property, which by the removal of Bozier's-court will become the west side of Tottenham-court-road, shall contribute to the cost of the improvement by means of an improvement rate to be ascertained and levied in accordance with the provisions suggested in the foregoing report (with such modifications or alterations as may be hereafter sanctioned by the Council prior to the application to Parliament; the remainder of the cost being paid by the Council.'

Nine Elms-lane, Battersea Park-road, York-road, and Wandsworth-road.—The three following suggested improvements (Nos. 4, 5, and 6) are situate in Lambeth, Battersea, and Wandsworth, and are intended to accommodate the increasing traffic passing along the line of thoroughfare extending from Vauxhall to Wandsworth Station on the London and South-Western Railway. They also form portions of a larger scheme which included the widening of a portion of the Wandsworth-road, between Nine Elms-lane and Vauxhall-cross and the narrow portion of the Albert Embankment. In regard to the latter we brought up a report in July, 1890, and the Council passed a resolution consenting to widen the Embankment on the condition of the local authority contributing one-fourth of the net cost, which, however, it declined to do, and the improvement dropped.

Proposals have been made from time to time to the several local authorities that they should contribute to the cost of all these improvements, but they have persistently declined to contribute, urging that they together form one improvement of a metropolitan character which should be paid for out of the County Fund. Pending the decision of the Council, we have not deemed it desirable to make further applications to them.

The improvement numbered 7 in the present report provides for the widening of two portions of Wandsworth-road, one included in the line of thoroughfare above mentioned, and one beyond the junction of this road with Nine Elms-lane.

4. *Nine Elms-lane, Battersea.*—The widening of Nine-elms-lane, Battersea, was one of the improvements included in the Bill deposited by the Metropolitan Board in 1888. All the clauses relating to this and other street improvements were withdrawn by the Council, and the proposals referred back to us for further consideration.

The proposition came before the Metropolitan Board on July 3, 1885, upon memorials from the local authorities, who contended that there was a large and increasing amount of heavy traffic along the road in question, the most important of such traffic passing between the east and west, on the south side of the Thames, and they therefore urged the Board to seek powers from Parliament to carry out the improvement. The Board on July 31, 1885, and on two subsequent occasions, decided not to apply for powers to effect the improvement, as the local authorities declined to contribute to the cost. The Vestries of Battersea and Lambeth, however, renewed their applications, deputations from the Vestries and from the residents in the district attended, and in August, 1888, the Board decided to apply to Parliament for power to carry out the widening at the cost of the metropolis. The improvement lies in two parishes, 2,400 ft. in the parish of Battersea, and 230 ft. in the parish of Lambeth.

Having examined the plan approved by the Metropolitan Board, we find that it does not provide for a sufficient width of road throughout, and we are unable, therefore, to recommend it. The road varies from 56 ft. to 30 ft., and the Board proposed to widen some portion to 40 ft. and other portions to 50 and 60 ft., the estimated net cost being 81,600*l.* The improvement is a costly one, and in our opinion should, if carried out, be done efficiently, providing adequately for the present and prospective traffic at the least possible outlay. We have given very careful consideration to this appli-

* See *Builder*, p. 70, *ante*.

cation, have received communications from the local authorities in support of it, and have repeatedly viewed the locality, the result being that we have come to the conclusion that the improvement may properly be undertaken by the Council, subject to contributions being received from the local authorities and from the South London Tramways Company, who would benefit by the improvement. The traffic on that part of the thoroughfare between Wandsworth-road and Nine Elms Brewery and the South-Western Railway Company's Goods-yard is greater than that between the Brewery and Battersea-park-road, and therefore we suggest that the former portion should be widened to 60 ft. and the latter to 50 ft., at an estimated net cost of 105,500*l.* We desire to draw the special attention of the Council to the fact that our estimate is based on the expectation of the Council not being compelled to acquire the whole of certain valuable wharf properties on the north side of Nine-elms-lane, only portions of which are needed for the improvement. 'Unless these were exempted from the operation of the 92nd section of the Lands Clauses Consolidation Act, 1845, the improvement would be so costly that we could not propose its being undertaken at present. We recommend,—

'That, subject to the Vestries of Battersea and Lambeth agreeing to contribute between them one-fourth of the net cost, and subject to a contribution of 5,000*l.* by the South London Tramways Company, powers be sought in the next Session of Parliament to widen Nine Elms-lane, Battersea, as shown upon the plan submitted herewith.'

5. *Battersea-park-road.*—The widening of Battersea-park-road was one of the improvements included in the Metropolitan Board's Bill of 1888, but was withdrawn by the Council in April, 1889, for further consideration.

The proposal first came before the Metropolitan Board as early as July, 1885, upon an application from the then local authority,—the Wandsworth District Board, who urged the Board to seek Parliamentary powers to effect the widening of the thoroughfare as a metropolitan improvement. The Board, however, decided not to apply for powers, as the District Board declined to contribute to the cost of the improvement. The local authority renewed its application in 1885, but the Board in October of that year, and again in 1887, decided against it. In June, 1888, the application was renewed by the Vestry of Battersea, which since 1885 had become the local authority having charge of a portion of the thoroughfare. Deputations from the Vestries of Battersea and Lambeth attended the Board in support of the suggested improvement. Finally, in August, 1888, the Board resolved to apply to Parliament for power to undertake the widening of the road as a metropolitan improvement. The width of the road varies from about 35 ft. to about 60 ft., and it was proposed, *chiefly by the acquisition of forecourts*, to extend the width generally to 50 ft.; but in some places the road, when widened, would have remained less than 40 ft. The estimated net cost was 28,600*l.*

We have carefully examined the Board's plan, and we find that it can be so improved as to provide for a minimum width of 50 ft. at a less cost than that of the Board's scheme; the estimated net cost of the improvement as now proposed being 27,400*l.*

Battersea-park-road forms part of a long line of thoroughfare giving access to the districts of Battersea and Wandsworth, and carrying the traffic from Kennington and Lambeth to Wandsworth, Putney, and the south-western districts. Having regard to the importance of the thoroughfare as part of a main artery of London, the amount of traffic using the road, the frequent congestion of such traffic, and the comparatively small outlay involved, we are of opinion that the Council would be justified in seeking powers to carry out the improvement, provided that contributions towards the cost be made by the local authority and by the Tramway Company.

In the event of the improvement being carried out, it would facilitate the widening of Christ Church-bridge, should that work at some future time be decided upon. This is being urged by the Vestry of Battersea, and by residents in the neighbourhood of the bridge. We recommend,—

'That, subject to the Vestry of Battersea agreeing to contribute one-fourth of the net cost of the improvement, and subject to a contribution of 1,500*l.* by the South London Tramways Company, powers be sought in the next session of Parliament to enable the Council to widen Battersea-park-road, as shown upon the plan submitted herewith.'

6. *York-road, Battersea.*—The Bill deposited by the Metropolitan Board in 1888 provided, *inter alia*, for the widening of York-road, Battersea, but all the clauses in the Bill relating to street improvements (including this one) were withdrawn by the Council in April, 1889, and referred to us for further consideration.

The Wandsworth District Board, in July, 1885, applied to the Metropolitan Board to carry out the improvement, stating that the inadequate width of the thoroughfare caused great inconvenience and danger, and that the traffic was frequently stopped, the road in many places being too narrow to allow the tramway cars to pass when vehicles were being unloaded at the shops. The District Board did not offer to contribute to the cost of the suggested improvement, but urged that the whole expense should be borne by the metropolis at large, the improvement being in its opinion one of a metropolitan character. The Metropolitan Board, however, declined to accede to the request of the District Board, being of opinion that the suggested improvement was one towards the cost of which the local authority should contribute. The District Board twice renewed its application, but the Metropolitan Board on each occasion adhered to its first decision in the matter. In June, 1888, the Vestry of Battersea, which, since its constitution in 1885, had charge of a portion of the thoroughfare, attended by deputation, and urged the Board to carry out the widening, stating that the road was much used by heavy vehicular traffic, was in parts very narrow, and was consequently both dangerous and highly inconvenient to the public. The deputation expressed the opinion that as the thoroughfare in question constituted one of the main arteries of London, the cost of the suggested widening should be borne by the whole of the metropolis. In this view the Board in August, 1888, concurred, and decided to apply to Parliament for powers to undertake the widening of the thoroughfare as a metropolitan improvement. The width of York-road varies from about 30 ft. to 50 ft., and the proposition was to increase the width in some parts to 40 ft., and in others to 50 ft., at an estimated net cost of 62,900*l.*

We have given careful consideration to the whole subject, but, whilst agreeing with the opinions of the local authorities that the improvement is very necessary, and should be carried out without delay, we consider that a portion of the cost should be borne by the Wandsworth District Board and the Vestry of Battersea, through whose districts the thoroughfare passes. We are also of opinion that the South London Tramways Company, which monopolises a large portion of the road, should be required to contribute to the cost. We have revised the plan of the late Board, so as to provide, at a very small additional cost, more adequate width than that suggested by the Board. We consider that the minimum width should be not less than 40 ft.; in some portions the width extends to 58 ft. The estimated net cost of the improvement as now proposed is 74,900*l.* We have viewed the locality and received reports from the officers, and as a result of considerable deliberation we have arrived at the conclusion that the width of the thoroughfare is insufficient for the great and increasing traffic which passes along it, and that the suggested improvement is one which the Council can be advised to carry out. The recommendation which we have to submit is as follows:—

'That, subject to the Vestry of Battersea and the Wandsworth District Board agreeing to contribute between them one-fourth of the net cost of the improvement, and subject to a contribution of 3,750*l.* by the South London Tramways Company, powers be sought in the next session of Parliament to enable the Council to widen York-road, Battersea, as shown upon the plan submitted herewith.

7. *Wandsworth-road.*—The next proposition which we have to submit is that for the widening of Wandsworth-road between Vauxhall-cross and the London and South-Western Railway Company's goods yard. This improvement came before the Metropolitan Board as early as October, 1885, when the Vestry of Lambeth attended the Board by deputation, and asked that the improvement might be carried out at the cost of the metropolis at large, urging that the thoroughfare was, during the business hours of the day, very crowded, and that the traffic using the thoroughfare was not local, but consisted of vehicles coming from and going to all parts of London. The Board, however, was of opinion that the improvement was one towards the cost of which the local authority should contribute, and therefore decided not to carry it out. In June, 1886, the Vestry renewed its application; but the Board, in October, 1887, adhered to its former decision. In June, 1888, the Vestry made an application for this and other improvements in the parish, and the Board decided to apply to Parliament for powers to carry out the other improvements (High-street, Vauxhall, Nine Elms-lane, and Battersea-park-road), but came to no decision with respect to the suggested widening of Wandsworth-road.

When the Council superseded the Metropolitan Board, we took the suggested improvement into consideration. In May, 1890, we learnt that the London and South-Western Railway Company was applying for powers to extend its goods yard at the Wandsworth-road, and we have endeavoured, but so far unsuccessfully, to enter into an arrangement with the Company by which part of the Company's goods yard would be laid into the road whereby a portion of the suggested improvement would be effected. We have not yet obtained the Company's assent to this, but in the event of the Council deciding to seek powers for this improvement, we propose to extend the limits of deviation in order that we may be enabled to acquire the property on either side of the road. The present width of the road varies from 42 ft. to 60 ft., and the suggested improvement provides for a minimum width of 60 ft. The estimated net cost of the improvement is 61,000*l.* We are of opinion that the local authority and the South London Tramways Company should be required to contribute to the cost of the improvement.

Wandsworth-road accommodates a large amount of traffic between Westminster, Kennington, Clapham, and Wandsworth, and forms part of one of the main thoroughfares of the metropolis. Having regard to the importance of the thoroughfare, the amount and congestion of the traffic using it, and the necessity for the suggested widening, we are of opinion that the work is one which the Council can be well advised to undertake. We recommend:—

'That, subject to the Vestry of Lambeth agreeing to contribute one-fourth of the net cost of the improvement, and subject to a contribution of 3,000*l.* by the South London Tramways Company, powers be sought in the next session of Parliament to enable the Council to widen Wandsworth-road, as shown upon the plan submitted herewith.'

8. *Bell-lane, Middlesex-street, and Sandy's-row.*—We reported to the Council on May 13, 1890, in reference to the widening of Bell-lane, Whitechapel, as follows:—

'The proposition to widen Bell-lane, regarded simply as a street improvement, does not commend itself to our judgment, as the traffic would not in our opinion justify the expenditure; another street, called Sandy's-row (a continuation of Middlesex-street), which runs parallel with Bell-lane, affords superior advantages.'

The consideration of the report was deferred. On March 18, 1890, the Council referred to us a petition from inhabitants of the Ward of Bishopsgate (which comprises Widegate-street and a portion of Sandy's-row), urging the Council to complete the Middlesex-street improvement by widening Sandy's-row.

Our investigations into the subject have convinced us that a good thoroughfare from Whitechapel to Bishopsgate is needed, in view of the speedy completion of the Tower Bridge, and we are of opinion that the best line for such a thoroughfare would be by way of Middlesex-street, Sandy's-row, and Widegate-street. The City Commissioners of Sewers applied to us in 1889 for a contribution to the cost of widening Widegate-street from Bishopsgate-street to Sandy's-street to a uniform width of 35 ft. Middlesex-street was widened by the Metropolitan Board of Works in 1883 to 40 ft., and we propose that the thoroughfare between Middlesex-street and No. 23, Sandy's-row, should be similarly widened, that a new street should be constructed from No. 23, Sandy's-row, to the point where Sandy's-street joins Widegate-street, and that the portion of Widegate-street between Sandy's-street and Bishopsgate-street should be widened to 40 ft., instead of 35 ft. as proposed by the City authorities.

It is proposed that arrangements be made with the Commissioners of Sewers for the widening of Widegate-street to 40 ft., and for the construction of so much of the new thoroughfare as would lie within the City boundary, and we consider that if the Commissioners agree to carry out this portion of the improvement, the Council will be justified in making a contribution towards the cost. The construction of so much of the improvement as would lie within the City boundary is estimated to cost about 59,750*l.*, and the other portion outside the City, which would be carried out by the Council, at 60,000*l.* net.

The Whitechapel District Board has urged the Council to carry out the suggested improvement. The traffic passing from Bishopsgate-street to Whitechapel and the Docks is inadequately provided for, and as it will soon be largely increased by the greater facilities afforded for crossing the Thames, it is obvious that the provision of some new means of communication between the districts named is inevitable. We submit the following recommendation:—

'That powers be sought in the next Session of Parliament to enable the Council to widen, at its own cost, Sandy's-row to 40 ft., between Middlesex-street and No. 23, Sandy's-row, and that, subject to the City Commissioners of Sewers agreeing to undertake the continuation of the thoroughfare, 40 ft. wide, from this point to Bishopsgate, as shown upon the plan submitted herewith, and subject to an estimate being submitted to the Council by the Finance Committee as required by the statute, the Council do contribute one-half of the entire net cost of the City portion of the improvement.'

9. *Tower Bridge, southern approach.*—We have had under consideration communications from the Vestry of Bermondsey and the St. Olave's District Board, urging the Council to construct a southern approach to the new Tower Bridge from Bermondsey-new-road.

The Vestry of Bermondsey made an application to the Metropolitan Board for this improvement as early as October, 1888, but the Board deferred its consideration until the construction of the new Tower Bridge should be in a more advanced state.

Provision has been made by the City Corporation for a southern approach to the new bridge from Tooley-street, but the local authorities point out that this will be totally inadequate to meet the requirements of the traffic, and they ask that the approach may be continued by the Council as far as Bermondsey-new-road, so that the traffic may be distributed amongst the various main thoroughfares leading to the different districts of South London.

We have had before us three plans of suggested routes for the new street. One (*a*) was submitted by the Vestry of Bermondsey, and provides for the construction of a street commencing at Tooley-street, proceeding southward on the eastern side of St. John's churchyard, thence in a direct line to the south-eastern corner of St. Mary Magdalen

Churchyard, then, curving westwards, passing through Bermondsey-square, and entering Bermondsey-new-road at its junction with Grange-road. The length of this street would be 2,500 ft., and the cost is estimated at 295,500*l.* net.

Another scheme (*b*) was suggested by the St. Olave's District Board. By this the street would commence at Tooley-street, skirt the eastern side of St. John's-churchyard, and thence proceed in almost a straight line to the north-western corner of St. Mary Magdalen-churchyard, where it would enter Bermondsey-street, which would be widened from the point of junction to Star-corner. The scheme would necessitate the purchase of valuable vinegar works, covering about an acre of ground, the Bermondsey Workhouse and parochial offices, and an important hat manufactory, which also covers nearly an acre of ground. The street would have the merit of being more direct than that provided by scheme *a*, being only 1,800 ft. in length, but the cost would be greater, viz., 379,500*l.*

A further scheme (*c*) which we have had before us, and which we have to submit to the Council for adoption, is that prepared by the officers. This provides for the construction of a street in almost the same direction as the proposal of the Bermondsey Vestry, but avoiding the detour of the latter by passing through the disused burial-ground (now used as a recreation-ground) adjoining St. Mary Magdalen Church. In order to compensate for the loss of a portion of this open space it is proposed to purchase and add to it some adjoining property. The scheme also provides for the widening of the southern end of Bermondsey-new-road which the other schemes leave untouched. The length of the new street would be 2,500 ft., and the cost is estimated at 280,500*l.* net. The estimated net cost of widening Bermondsey New-road is 55,000*l.* All the schemes suggested that the width of the new street should be 60 ft., but, having regard to the amount of traffic at present passing through the district, and to the large increase which the opening of the Tower Bridge will involve, and especially having in view that the neighbourhood is densely populated and is not provided with any open space of any importance, we are of opinion that the new street should be 80 ft. wide, and that Bermondsey New-road, from the junction of the new street to Old Kent-road, should be widened to 60 ft. throughout. The estimated net cost on this basis is 336,000*l.* for the new street, and 77,000*l.* for widening Bermondsey New-road. Towards this amount we think the local authorities (the Vestry of Bermondsey, the St. Olave's District Board, and the Vestry of St. George-the-Martyr, Southwark) might reasonably be called upon to contribute an amount in proportion to the length of the improvement passing through their respective districts. Bearing in mind, however, the importance of the improvement to the whole of London, we consider that the contributions from the local authorities should be limited to the following—25,000*l.* from the Vestry of Bermondsey, 5,000*l.* from the St. Olave's District Board, and 5,000*l.* from the Vestry of St. George-the-Martyr, Southwark. All these bodies will profit by the increased rateable value of property in the vicinity of an improvement of such an important character as this.

Four hundred and fifty persons of the labouring class will be displaced, and provision is made for a site for artizans' dwellings to accommodate a like number. We recommend—

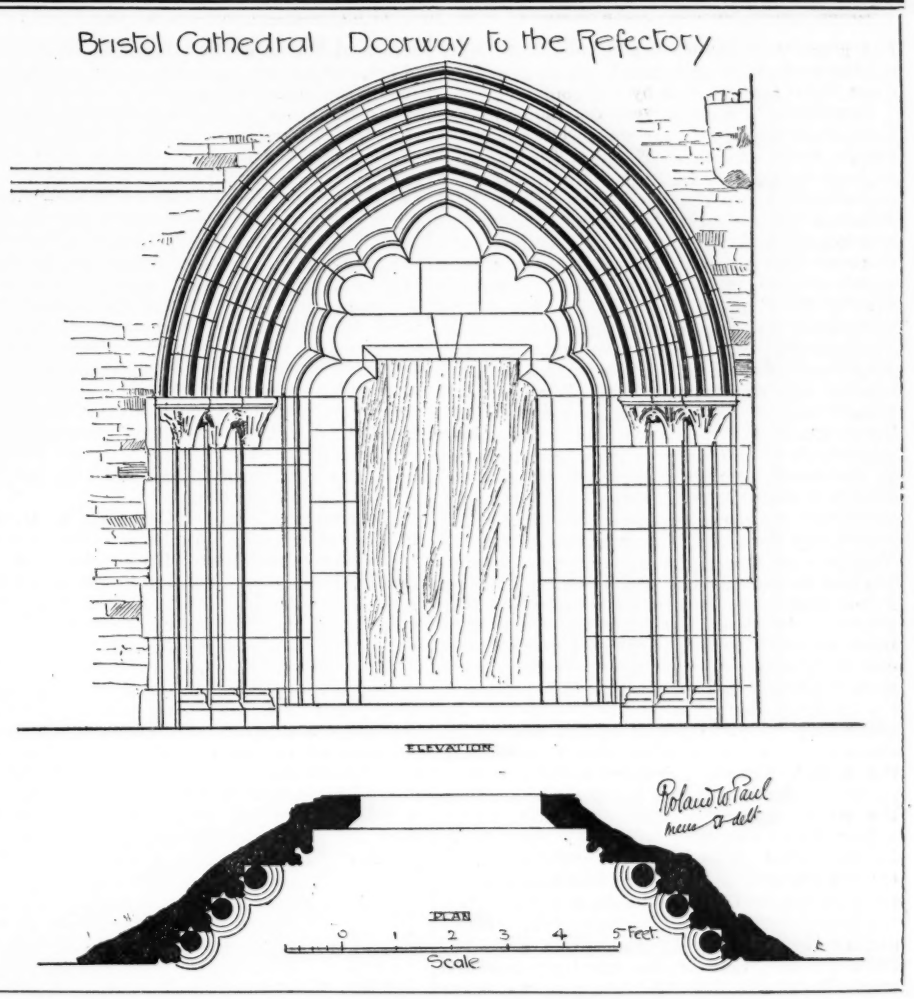
'*(a)* That, subject to the Vestry of Bermondsey agreeing to contribute 25,000*l.*, the St. Olave's District Board 5,000*l.*, and the Vestry of St. George-the-Martyr, Southwark, 5,000*l.*, powers be sought in the next session of Parliament to enable the Council to construct a new street, 80 ft. wide, from Tooley-street to Bermondsey-new-road, and to widen Bermondsey-new-road from its junction with the new street to Old Kent-road, as shown upon the plan submitted herewith.

'*(b)* That it be referred to the Housing, &c., Committee to consider and report as to the arrangements to be made for rehousing persons of the labouring class to be displaced by the formation of the new street.'"

Mr. Hubbard moved (as an amendment to the motion "That the Report be received")—

"That, while thanking the Improvements Committee for their report, and fully recognising the importance of the improvements proposed, the Council is of opinion that in view of the near approach of the next County Council election, it is not desirable for the present Council to commit the ratepayers to so large an expenditure as is suggested in the report of the Committee."

This was seconded by Mr. Torrance, and supported by several members, either on "economical" grounds, or on the ground that the proposals of the Improvements Committee as to recoupment were not satisfactory. Several members, on the other hand (Mr. B. L. Cohen amongst them), strongly deprecated delay in the execution of absolutely necessary improvements, for the longer they were delayed the more costly would they be in execution. On a show of hands being taken, 38 members voted for the reception of the report, and 35 against. On a division being taken, there were 42 for the amendment and 41 against.



On the amendment being put as a substantive resolution, several amendments were moved, seeking to exempt certain of the Committee's proposals from the operation of the amendment—to enable them, in fact, to be passed. These amendments were all negatived except one, relating to the Bell-lane and Sandy's-row improvement (No. 8 of the Committee's proposals), which was accepted on a division by 43 votes to 39.

The original amendment was then agreed to as a substantive motion, with the following addendum, moved by Mr. Dickinson :—

"And that it be referred back to the Committee to bring up at the first meeting of the Council after the recess those improvements which they consider to be of the greatest urgency."

The Proposed New Theatre in Cockspur-street.—The discussion of this matter (see *Builder* p. 14 *ante* and pp. 489 and 511 of our last volume) was renewed on a new report brought up by the Theatres and Music Halls Committee. The Committee recommended the acceptance of the plans as being as satisfactory as the site would allow, but at the same time they suggested that the Council should decline to accept any responsibility for what might possibly occur hereafter in consequence of the erection of a theatre upon a site which was not well adapted for the purpose for which it was intended to use it.

Mr. Hutton moved, and Mr. Benn seconded :—

"That, in the opinion of the Council, the plans now submitted by Mr. Emden are not strictly in accordance with the regulations, and, having regard to the unsatisfactory situation of the proposed theatre in relation to the premises adjacent, the Council consider it is not a case where a departure from the regulations should be sanctioned."

After some discussion, the Council divided, and there voted—For the amendment, 23; against, 26; majority against, 3. The further consideration of the matter was deferred until Tuesday last, when the Council held another meeting (practically the last before the recess, although a supplementary meeting is to be held for the transaction of some formal business), and got through a great deal of business, which was, however, of no special interest to our readers. Ultimately, it was resolved—

"That copies of the plans of the proposed theatre be sent to the Lord Chamberlain, with an intimation that the Council is of opinion that the site is unsuitable for a theatre; and that a similar resolution be sent to the Office of Woods and Forests."

After transacting other business the Council adjourned.

Illustrations.

BRISTOL CATHEDRAL.*

ROBERT FITZHARDING founded the Abbey for Canons Regular of Saint Augustine at Billeswick, outside the walls of Bristol Castle, in 1142. Four hundred years afterwards,—namely, in 1542,—the first Bishop was elected to the See. These two dates mark the two chief epochs in the history of Bristol Cathedral, now dedicated to the Holy Trinity, formerly dedicated to St. Augustine, and forming the Minster church. We have but scanty remains of the Norman church, and it would be difficult to place the work that remains as belonging to Fitzharding's original structure. But the transept walls are very largely of the Norman period, retaining on the south front the mark of the pitch of the early roof. They have been much altered in later times, but enough remains to testify to the importance and size of the first building. It is in the conventual buildings that we find the most important remains of this period. The beautiful chapter-house, — now somewhat shortened,—is unique in its way, and is approached by a picturesque vestibule divided into three aisles. North-west of the church are interesting remains in the lower portion of the great gateway of the monastery, and on the south side of the cloister, towards the river, are considerable remains of the monastic buildings incorporated with more modern work. The fine doorway, of which we give an elevation, led from the south cloister walk to the refectory. This is, of course, later, and Early English in style.

Returning to the church, we find that in the thirteenth century a Lady Chapel was erected eastward of the north transept, parallel with the north side of the Norman choir. It was detached on its south side from the church, as similar additions of later date at Peterborough and Ely, and the early wall of the transept was very curiously cut back to obtain sufficient space for the Early English arch. This chapel, now in a sadly ruinous condition,

* We may mention that this series of illustrations of the Cathedrals of England and Wales commenced with Canterbury, which appeared in the *Builder* for January 3 last. Since that date, the following Cathedrals have been illustrated, viz., Lichfield, in the number for February 7; St. Albans (before the alterations of recent years), March 7; Peterborough, April 4; Wells, May 2; Exeter, June 6; and Salisbury, July 4. The ninth of the series, viz., Norwich, will appear in the *Builder* for September 5 next.

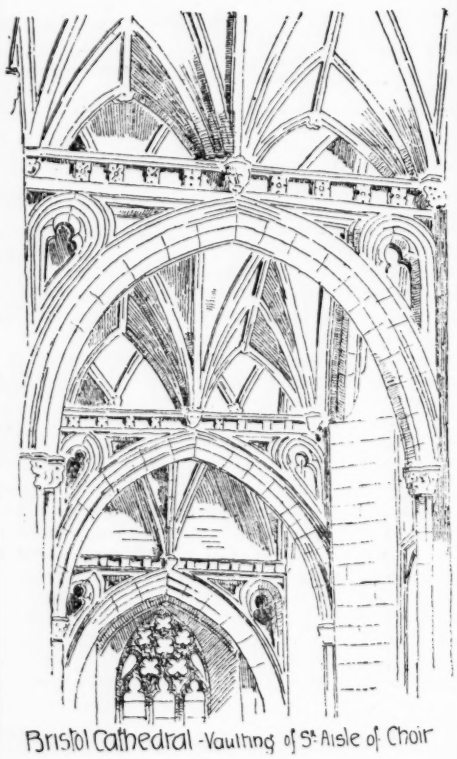
has some very beautiful wall arcading, richly ornamented with sculptured grotesques and some slight remains of colour decoration.

Fitzharding's church was destined, in the fourteenth century, to be replaced to a large extent by a structure which is also of the highest value, and for which we could more contentedly spare the first building. In 1306 Edmund Knowle succeeded to the Abbacy, and commenced the great work of rebuilding the church. The change was commenced, as was usual, at the east end, and we may conclude that by the time of his death in 1332 he had completed the greater portion of the present Presbytery and choir. Knowle increased both length and breadth, and his new aisle abutted against the wall of the Early English Lady Chapel and closed its windows on that side. There are, however, two portions of the eastern arm which do not seem to have been included in the work actually completed by Knowle. Firstly a chapel, known as the Berkeley Chapel, projects south from the easternmost bay of the Presbytery aisle, and is approached through a Vestibule or Sacristy, with some very interesting and curious carving and skeleton vaulting. From evidences on the exterior, where the plinth is of different design, it appears to have been an addition by, perhaps, Knowle's successor, John Snow. Again, on referring to the ground plan, it will be seen that the vaulting of the western bay of the south aisle of the presbytery differs from that of the rest of the church. It seems possible that in rebuilding the church Knowle was more anxious to complete the north side, as being that seen from the public approach, than the south, which adjoined the monastic buildings. The Early English, now known as the "Elder," Lady Chapel was retained, and used for service during the progress of the new choir, and was afterwards incorporated with the new work. On the south a Norman chapel probably still projected from the east face of the transept, and this might have been left until the rest was complete, and afterwards added by Snow when the whole scheme, including the chapel, now the Newton Chapel, was carried out. The central and western portions of the church were undoubtedly intended to be carried out in a corresponding style with the Presbytery. As was the case at Salisbury, foundations would seem to have been laid, if not for immediate use, at all events as a preparation for future work, and a guide to future builders.

At Lichfield an example occurs of a strongly-marked orientation—a deflexion of the eastern arm to the north. The same occurs at Bristol, and as in the other case, is probably a rentention of the lines on which the earlier church was built. We know from records that the great building Abbot, Knowle, was buried in front of the rood altar (which stood under the western arch of the central tower) Although this fact does not prove that Knowle completed the fabric, it seems evidence that he had completed his ideas of the tranformation of the fabric up to that point, and his grave thus marks the limit of his work westward. It was found, however, in 1866, when the ground was lowered, that the foundations had not only been put in on the north side, but a portion of the west façade had also been set out. Here again it must be borne in mind that the north side was, at Bristol, the public approach to the great church, and that, therefore, it might have been considered as of greater importance that in any alteration of the fabric provision should be made for the completion of that side before that facing the monastery. The nave in Augustinian Abbey Churches having often been used as a parish church (the altar under or west of the rood screen being the parochial altar) was an additional reason for this mode of procedure. Abbot Newland, in the fifteenth century, would seem to have carried Knowle's work (supposing the foundations to have been his) up to the cills of the windows, but the dissolution overtook the monastery before the new nave was completed, and with the destruction of the Norman nave (which would seem to have been left by the later builders), Bristol, made a cathedral, remained an incomplete building up to 1868, when the foundation-stone of the present nave, from the designs by the late Mr. G. E. Street, was laid.

The central tower, which has been purposely omitted in the foregoing account, demands some special attention. From a casual glance at the pavement, it is evident that the tower is not square, but on more careful examination the reason of this is evident. As has been before noted, the Presbytery bends to the north, being out of the line of the nave by about 5 ft. at the east end. When Knowle rebuilt or transformed the piers of the central tower, he kept the east and west arches parallel with the sides of the transepts, and at right-angles with the lines of the Presbytery, but the north and south arches were made parallel with the nave; and the ingenious manner of the planning reduces to a minimum any distortion which may be apparent in looking from west to east, or *vice versâ*. The upper, or belfry, stage of the central tower is of fifteenth century date—early in the century, and probably the work of Abbot Newbury. It is, as will be seen on reference to the exterior view which we give in the present number, a very stately and impressive piece of design, simple in detail, but now, unfortunately, in a sadly dilapidated condition. It is, however, decidedly a feature which adds considerable dignity to the Cathedral.

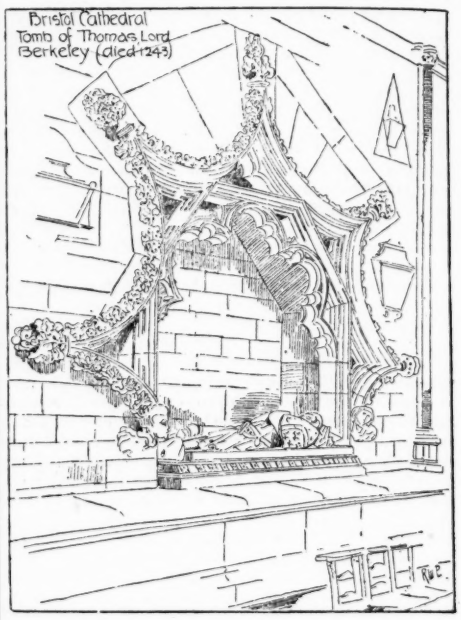
The exterior of Bristol Cathedral is certainly no guide to the effect of the interior. On first approach the buttresses with considerable projection, and the great height of the side aisles, have a peculiarly heavy effect, the value of which is not appreciated until the interior has been seen. Knowle, as if foretelling the rise of the great western mercantile centre, and its consequent smoke-laden atmosphere, designed his choir, if for nothing else, certainly for light. He placed a magnificent nine-light window at the east-end of the Lady-chapel, and filled it with equally magnificent glass, illustrating the stem of Jesse, and he carried up his side-aisles to an almost equal height with the central aisle of the presbytery, introduced the peculiar form of vaulting which we show



Bristol Cathedral - Vaulting of St Aisle of Choir

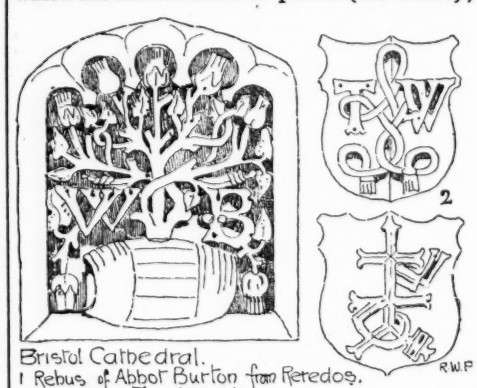
in the sketch, and inserted tall transomed three and four-light windows in the side walls. There is consequently no clearstory, and the place of a triforium is taken by a passage which passes round the interior on a level with the window-cills. The vaulting of the church is a very curious and interesting feature, one of the most curious examples being that already referred to in the sacristy on the south side, and which we fully illustrated by measured drawings in the *Builder*, Aug. 8, 1885. Uncommon in design also are the sepulchral recesses, seemingly a portion of Knowle's original design. They occur in the side aisles of the choir and presbytery, and on either side of the Lady Chapel. Two in the north aisle are empty, the three in the Lady Chapel are occupied by the effigies of Abbots Newbury, Hunt, and Newland, while those in the south aisle are devoted to the descendants of the founders, the Berkeleys. The effigy of Thomas, Lord Berkeley (of whose tomb we give a sketch), is a fine piece of workmanship, with a good example of a heater-shaped shield, charged with the Berkeley arms. There is also a curious Berkeley monument in the Berkeley Chapel, with armorial shields.

Another interesting feature is the elaborate arcading of the Lady Chapel, with its series of lias shafts and grotesque carvings. This portion

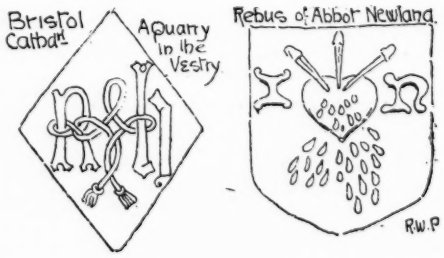


of the church is in need of restoration, but it should be most carefully done, and the carvings religiously preserved from scraping.

Other features of later date are the reredos at the east end of the Lady Chapel, erected by Abbot Burton (1530-1537), and consisting of three large ogee arches deeply recessed with armorial bearings above, and a cresting in which the Abbot's rebus is placed (see sketch);



Bristol Cathedral.
1 Rebus of Abbot Burton from Reredos.
2 Initials of Thos. Wright.



the choir-stalls, the work of Abbot Elliott (1515), with curious misereres; and the monuments of Paul Bushe, the first Bishop of the See, 1542, in the north aisle of the Presbytery, and those of the Newton family, of still later date, in their chapel adjoining the south transept.

Now that the Cathedral has been, so far as the main fabric is considered, completed by the rebuilding of the nave and two western towers, it now remains for the presbytery and the choir fittings to be brought back to their proper position. Knowle carefully marked the extent of the presbytery in his vaulting, the first four bays eastwards from the tower having cusping introduced, whereas those further east are without it. Everything now is pushed eastward, and the ritual choir occupies the site of the altar and the former aisle or ambulatory which passed behind the reredos, and divided it from the Lady Chapel. The result is a sad want of elevation (there is only *one* step between the west and east walls!). So long as the Cathedral remained in an incomplete state. some sort of arrangement such as this became necessary, but now there is every reason why the internal arrangements should be brought back to their original and proper place, and

thereby add a dignity to the interior which is at present seriously wanting.

The monastery on the south side, the chapter-house, and refectory, have already been noted. The east cloister alley remains, and is roofed; the north cloister has been moved outwards by Mr. Street's new nave, and has not yet been covered in. The quadrangle is not square, as the south side runs parallel with the choir and not with the nave. The western portion, or nave, shown on the plan, has been taken from one kindly placed at our disposal by Mr. Arthur Street. The remaining ancient portion of the cathedral has been specially measured and plotted for the series.

GREY FRIARS, CHILWORTH, SURREY.

This building is being erected to serve the purpose of a Noviciate to the English Province of the Franciscans or Grey Friars, who, although possessing many houses in England, have hitherto had their noviciate out of the country. As the Province lineally represents that of the Observant Friars so much favoured by Henry VII., who founded their principal houses, the style of the present noviciate was desired to be that of the period of their former prosperity. The buildings are arranged in the form of a quadrangle, with the church on the north side, and the endeavour has been to embody in the plan as far as possible all specially Franciscan features, the whole being simple and severe, in accordance with the principles of the order. The materials used are local stone from Ewhurst for the walling, with dressings of Chilmark stone, the roofs being covered with Broseley tiles. Mr. Fredk. A. Walters, F.S.A., of Great Queen-street, Westminster, is the architect, and the contractors are Messrs. J. Longley & Co., of Crawley, Sussex. The total cost of the buildings will be about 10,000*l.*

BOARD SCHOOLS, PLOUGH-ROAD, BATTERSEA, S.W.

This school (situate in the West Lambeth Division) has been recently erected for the School Board for London, from the designs of their architect, Mr. Thos. J. Bailey.

The building accommodates 1,200 children, in three departments—boys', girls', and infants', —with a central hall for each department, 65 ft. by 33 ft., and contains the usual accessories, with sufficient cloak-room accommodation, teachers' rooms, lavatories, &c. There are ample playgrounds, with caretaker's house and Cookery Centre. The staircases are faced with glazed bricks, as also are the dados of class-rooms and halls. The exterior is built in the ordinary grey stocks, with red edgings and stone gables, the roofs being of red tiles.

The cost of the school has been 16,250*l.* 11s. 4d., the builder being Mr. Charles Cox, of Hackney.

THE RELATIVE MERIT AND COST OF GAS AND ELECTRICITY FOR LIGHTING PURPOSES.

At the annual meeting of the Incorporated Association of Municipal and County Engineers, held recently (see *Builder*, pp. 12, 49 *ante*),—the President (Mr. T. de C. Meade) in the chair, —a lecture on this subject was delivered by Mr. W. H. Preece, F.R.S., the Chief Electrician to the Post Office. The following is a full report of his remarks, for which we are indebted to the *Journal of Gas Lighting*:—

Mr. Preece said: I have the pleasure this morning of bringing before you the subject of the relative merit and cost of gas and electricity for lighting purposes; and, as a practical man speaking to practical men, I propose to consider the matter solely from a practical point of view, and to deal rather with the financial aspect of the question than with mere technics. Of course, I shall have to deal with figures, and figures are proverbially dry. It has been said that you cannot extract a joke out of figures, and that you can always manipulate them to suit your own particular views. Neither statement, however, is quite true. As regards manipulating figures to suit one's own ideas, I dare say it will be said I am going to do very much that kind of thing; but I am addressing you to-day,—if I have any prejudice,—as a gas shareholder, and not as an enthusiastic electrician.

Comparisons of cost are generally fallacious, because the comparison depends so very much upon the point of view. The questions which we have to decide are generally such as this:—What is the capital involved in any particular industry? What is the profit derived? What has the consumer to pay? Well, I told you I am going to address you as a practical man; and I am not going to bring before you any fanciful figures. They are figures which you can all get for yourselves, and you will be able to check the deductions I am going to make. Now, I have taken the case of Manchester, for the simple reason that I have more authentic records of what is done there than in any other town. From the records of the Gas Department of that city, it seems that a ton of coal produces 9,611 cubic ft. of 20-candle gas. Of course, that is rather above the average candle power throughout the country; the average is not more than 15 candles. Since this is the quantity of gas produced by a ton of coal it follows that 1 lb. of coal will yield 4·29 cubic ft. of gas; and if 4·29 ft. of Manchester gas is burned per hour, we get an illumination of 17·2 candles. In drawing a comparison between gas and electricity I must use one technical term. It is a term that has come into very general use, and will have to be understood,—even if it is not understood now,—by every engineer, whether electrical or municipal. That term is the "watt." A watt is a unit of power. The common unit of work with which we are most acquainted is the foot-pound; and the unit of power we know best is the horse-power,—that is, the power exerted that will raise 33,000 lbs. 1 ft. per hour. In other words, you may say a horse-power is the power which will raise 550 lbs. 1 ft. per second. Now a watt is the power which, in the metrical system, will raise,—I forget the exact value in grammes per centimètre; but it is that exact power which is exerted by a current of electricity called an ampère when flowing through a resistance of 1 ohm for one second,—it connects mechanical power with electrical energy. So, in the use of electrical energy, if we burn in a steam-boiler 7 lbs. of coal per hour, we shall get 1⅛-horse-power. But represented in watts, it means that we shall produce 1,000 watts; and 1,000 watts is called a kilowatt. We saw that 1 lb. of coal turned into gas will give us an illuminating power of 17·2 candles. I must here observe that we can use electrical energy in two forms,—one in the arc lamp, which we see illuminating streets a good deal, and the other in the glow lamp, which we use in our houses. Now 1 lb. of coal burned in a boiler to produce steam will supply electrical energy which will give, if burned in the form of a glow lamp, 48 candles, and if in the form of an arc lamp 288 candles. So there we start with the first theoretical fact that I wish to bring before you.

But now we will come to hard facts. In Manchester, during the twelve months ending March 30, 1890, the income derived from gas was 434,351*l.*; and the expenditure was 360,804*l.*,—showing a balance of 73,547*l.*, which was devoted to meeting interest on loans, depreciation, cost of public lighting, &c. But from that fact, I derive this,—that the cost per 1,000 cubic feet of gas was 2s.; and, therefore, 2s. produced an illuminating power of 4,000 candles. I am obliged to use an estimate; for the simple reason that at present the Corporation of Manchester have not established a central electric lighting station. They have obtained a Provisional Order to enable them to do so; but they are now considering whether they shall carry out the Order themselves, or transfer their powers to another body. In making an estimate of the cost of producing electricity in Manchester, we have to take the experience of other places; and on this point of cost, there are perhaps more reliable, accurate, and truthful facts than on anything else connected with electricity. The Board of Trade exercises such a powerful control over the electric lighting interest that there is no "hanky-panky-ing" with the accounts. They must show the cost of production; and they are within the reach of everyone. We have at the present time a great many of our post-offices lighted by electricity. I have a large central station at the General Post Office, and have there a plant by which we are going to produce sufficient power to illuminate 10,000 lamps. We are laying down another central station at Coldbath Fields—now called Mount Pleasant—where we shall be able to generate electricity for a further 10,000 lamps. From my own experience there is not a shadow of doubt that at the present moment we can produce a kilowatt-hour (which is the unit of energy to compare with 1,000 cubic feet) for 4d. Taking this 4d. it means this: That we can produce 4,000 candles by gas for 2s.; by an arc lamp for 8d.; and by a glow lamp for 4s. So that you see on these facts—I will not call them estimates; they are facts—that the theoretical limit of light produced is twice as much by the glow lamp as it is by the gas lamp. These are theoretical limits; they are not practical ones. We all know this, however proud we, as gas-engineers, may be at producing gas of 20-candle power, that, when we go to the shops and houses of the consumers of gas, the 20 candles are greatly diminished. This is a very important question; but it is one that, some six or seven years ago, concerned us very much at the Post Office. Mr. Vernon Harcourt and I devoted a considerable amount of time to experimenting on this question. Mr. Harcourt found that an ordinary open burner, supposed to consume 5 cubic feet of gas per hour, and which ought to give a light of 15 candles, really only gave practically 10 candles,—due to dirt in the burners, and probably to the draughts and the flickering of the light preventing the proper combustion of the gas. This *pro ratâ* value found for London is equally true for Manchester or anywhere else; and the result is that, to obtain 4,000-candle power, you must practically add 30 per cent. to the cost of the gas. By the by, I ought to say that this depreciation in the value of light is not only true in the case of gas, but it is also true to a certain extent in the case of electricity. The lamps that are sold will give you, when they are new, 16-candle power; but in the course of 200 or 300 hours, there is a peculiar action progressing between the current of electricity which is flowing and the carbon filament, which causes the latter to evaporate,—it flies away in straight lines, and is deposited as a thin coating on the glass bulb, obstructing a certain amount of light. You have also a quantity of dirt accumulating on the exterior of the glass bulb; so that you have a depreciation of the value of the electricity, although not so great as in the case of gas.

I should mention that, in the remarks I am now going to make, I draw no distinction in light-giving power when I speak of a lamp, whether electric or gas. Five cubic feet of gas will give practically 10 candles; 33 watts of electricity in its normal condition will give 10 candles. So, by taking your calculations on 33-watt (or 10-candle power) lamps, you draw a very fair comparison between gas and electricity when used as an artificial illuminant. These figures want further correction. There is one element in gas which is a very serious loss indeed,—that is, the tremendous waste of gas which occurs through lights being left burning unnecessarily. The result is that quite 20 per cent. of gas is used more than is essential; and it is brought out as a very striking fact by this,—that, taking the nine principal towns in this country, the average number of hours of burning gas is 600; while the average number of hours for electricity is 460. This last figure is taken from 200,000 lamps which are now alight in London. Well, with gas you have a tremendous waste, owing to these burners being left flaring about; but with electricity we have no such waste. By simply turning a tap we can put the light "in" or out; while with gas you each time require a match. There is a species of instinct that teaches the consumer at once that, if he wants a light in a particular place, with electricity he has only to turn the tap; and when he has done with it, he has simply to give it another turn. The result is he gets no waste. Now it comes to this, that the comparison between gas and a glow lamp is not 2s., but the practical figure of 3s. 8d. Now we can prove this. The average amount paid in the nine chief towns of this country per gas-burner is 9s.; while the average price of gas is 3s. per 1,000 cubic feet. The average price of the 200,000 lamps that are lighted in London is 10s. per lamp. So that we have these two facts,—that the average price paid by the consumer for gas is 9s. per annum; and by the consumer of electricity, 10s. This is a startling figure, because most people are under the impression that the cost of the electric light is very much greater than gas; and I have been myself much surprised to find that the price I paid in my house (where I generate my own electricity, and have done so for seven or eight years) was so very small. I have a gas-engine, accumulators, and over seventy lamps fixed in the house; and I am paying no more than I did for gas-lighting,—the price per lamp being less than 10s.

I have taken all the Electric Light Companies in London, and have tabulated the revenue derived by each company per lamp per annum,—that is, a 33-watt lamp. The Metropolitan Electric Supply Company derive a revenue of 12s. per lamp; the Chelsea Electricity Supply Company, 8s. 6d.; the Kensington and Knightsbridge Company, 9s. 2d.; the House-to-House Electric Supply Company, 11s. 6d.; the St. James and Pall Mall Electricity Supply Company, 9s. 6d.; and a Company not in London,—that is the Brighton,—8s. 6d. The average amount paid for 200,000 lamps is, therefore, 10s., compared with 9s. for gas. Well, I have verified this ratio between the two. Taking two years' experience with each light at the General Post Office, we find that gas costs us 18s. per lamp, and electricity 22s.; the ratio being 9 to 11, and not 9 to 10 as in the figures I have given you. Taking Manchester, where the gas is cheaper than in London, it appears from the returns that the average price paid per lamp for gas is 7s. 6d. per annum; while, taking the cost of the production of electricity,—viz., 4d.,—the revenue that Manchester will derive from electric lamps will be 8s. 4d. The rates of charge for electricity vary very much. In London the private companies are charging in some instances 7¼d., and in others 8d. In Bradford, they commenced by charging 5d.; and they have raised it to 6d. In Newcastle, they charge 4½d., and allow large discounts. At the Post Office in Newcastle we are large users of electricity; and I think we have a discount off the 4½d., which makes the cost approach very closely to that of gas. In the case of factories, where they have isolated installations, electricity is really cheaper than gas. I have the figures from a large mill at Bolton, where they have had the electric light in use for upwards of six years. While they were using gas, the cost per lamp came to 5s. 6¾d.; since generating their own electricity, it works out to 4s. 0¼d., which is a considerable reduction. Those who are acquainted with Manchester know that under the Exchange there is a large restaurant that used to be unbearable when it was lighted with gas. The manager, however, replaced the gas with electricity; and he finds that he not only saves 80*l.* a year in the cost of illumination, but he has probably doubled the business by clearing the atmosphere and enabling his customers to have their meals in comfort.

So far as figures go I think that I have given you rather hard facts, to show that there is not much difference between the cost of electricity and gas. In my own case I burn gas; but I do so in the garden, and extract from it that which I want,—viz., light for my house. Take 25 cubic ft. of gas, and burn it direct, you will practically get only 50 candles by means of the burners, from which I have drawn my calculations; but if you burn 25 cubic ft. of gas in a gas-engine, and get horse power, and convert it into electrical energy, this will give you 160 candles. Therefore, with a little additional expenditure and care you are able to use gas, and get treble the light-giving power in your house. I ought to have mentioned before that one of the great merits of electrical machinery over gas plant is the small space that the former requires. In the case of gas plant, 100 ft. by 50 ft. is, I believe, needed for every million cubic feet of gas produced per annum; but a similar space is quite sufficient to light up the whole of one of our big towns by means of electricity.

We must not neglect other points. When we adopt electric lighting, we remove from our midst a source of deterioration of our goods and chattels, and books and pictures, and that which dirties our ceilings; we are introducing something that encourages cleanliness; and we add materially to our comfort, and consequently to our cheerfulness. As to the security of our buildings, electric lighting is not absolutely safe. It is all nonsense to say that it is perfectly safe; it is not so. Carelessness will cause fire as in the case of gas. It requires the usual care, which engineers know so well how to exercise. The question of health, however, I want to thrust down everybody's throat. We find in the Savings Bank Department at the General Post Office that the cost of the electric light is paid for by the increased service we get out of our staff. The introduction of the electric light there has diminished the number of hours of absence by two hours per head per annum. This diminution, put down at 10d. per hour (which is the ordinary rate of pay for overtime in the Government service), saves us 680*l.* per year alone. The electric light costs us 700*l.*; so that really the cost of lighting is only 20*l.* a year. I succeeded in putting the electric light into the General Post Office just before last Christmas, and the Controller told me that the light on Christmas evening enabled them to get through their work quicker than in the previous year to an extent equal to 200 men. The sanitary aspect of electric lighting is also of great importance to engineers. The impurities emitted by gas into the air are poisonous, and gas burned in a bed-chamber is as great an evil as bad water and bad smells.

There is another point connected with electric lighting,—it is not a luxury. A common statement made, when matters of this kind are argued by local boards and other authorities, is: "This is a light of luxury. We don't want this thing in our midst; it is only the rich man who can afford to pay for it." The electric light, I contend, is the poor man's light. If you can give a poor man a light for 8s. 4d. a year, as in Manchester, think of the benefits he will derive, living as he does in a close, ill-ventilated chamber, where gas and oil are really filthy. Besides, the price of gas is going up through strikes, labour disputes, and so on; while the price of electricity is coming down. We can produce 1,000 cubic feet of gas at 1s. 10d. (that is, taking 2d. off for collection and management), or perhaps as low as 1s. 7½d., 1s. 4d., or even 1s. But what can we produce electricity for? I have just been making an exhaustive inquiry as to the cost of electricity for the production of phosphorus and the decomposition of copper. These are industries where the use of the current is continuous; whereas in electric lighting, the load is irregular. Where the load-line is regular, as in works where phosphorus and copper are manufactured, you can produce electricity for ⅓d. per unit. It means this, that, if we take the theoretical difference between gas and electricity, the equivalent of gas is produced at 3d.; so that we have the prospect before us of producing electricity at ⅓d. per unit, against 3d. for gas. There is one reason why gas is still ahead of electricity. It is that there is such a market in this country for residuals. The price obtained for coke, ammoniacal liquor, and other products, practically reduces the price of coal to the gas manufacturer to something like 4s. per ton. In London we have to pay for Welsh coal about 23s. per ton; and that is why in London electricity must cost more than gas for some time to come. I have been looking into the matter of the lighting of Malta and Gibraltar; and when we come to those places, where there is no market for residuals, there is no difficulty whatever on my part in showing that it is possible to produce electricity cheaper than gas.

I have now done, gentlemen. As I said at the beginning, I wish to place this matter before you as a practical man speaking to practical men; and I want you, if you agree with my calculations, to point out to your different authorities that their duty is to look to this matter of the introduction of the electric light,—not only from a financial point of view, but from a political, as well as from a sanitary, point of view,—and try to persuade them that the electric light is not the light of luxury, but the poor man's light.

A brief discussion followed the lecture. The President first moved a vote of thanks, which was seconded by Mr. Lemon, of Southampton. Mr. Brodie, of Whitehaven, asked whether Mr. Preece, in comparing the cost of the two lights in his house, included the outlay for the gas-engine, dynamo, and other plant. He also drew attention to the fact that Mr. Preece had taken the price of electricity at Newcastle for his comparisons; and there it was only 4½d. per unit, with a large discount. This was an unfortunate instance to take, as coal should certainly be cheaper there than anywhere else. What he should like to know was, what would be the cost per unit at Malta and Gibraltar, where the cost of coal was greater? Mr. Fowler, of Stockport, observed that the remarks Mr. Preece had made as to the use of gas-engines for generating electricity were based on the use of ordinary coal gas. If Dowson gas were used he apprehended the cost would be reduced to something like one-third, because this gas only cost 2d. or 2½d. per 1,000 cubic ft.

Replying to the points raised by the various speakers, Mr. Preece said first with respect to the relative cost of gas and electricity in his house, he would cry "peccavi." He was now using exactly the same quantity of gas in the engine as he did previously for lighting direct with gas; but by means of the engine he obtained three times the amount of light. It was not the first time the question had been put to him, "You, a business man, allow nothing for depreciation, nor for interest on capital?" He replied, "Certainly not. You do not allow for depreciation on your piano, or interest on the money paid for your pictures or furniture. Then why should I allow interest on the outlay for my engine and dynamo?" As to the cost of coal in Malta and Gibraltar, he might say that the element of coal was not a serious item in the cost of the production of the electric light. The cost of coal per unit in London was about 1d.; but, as a matter of fact, the cost at the General Post Office was ½d., and that with best Welsh steam-coal at 23s. per ton. Coal could be had at Malta and Gibraltar at 24s. and 25s. per ton; so that really there was no perceptible difference. There was no doubt whatever they could produce electrical energy by means of Dowson gas in gas-engines at one-third the price of illuminating gas. The most careful experiments had been made by Messrs. Crossley, and they stated that by Dowson gas it cost 1¼d. for fuel per horse-power per hour. The ordinary price allowed for coal was 2½d. per horse-power.

The vote of thanks was passed by acclamation.

BUILDERS' BENEVOLENT INSTITUTION:

ANNUAL MEETING.

The forty-fourth annual meeting of this Institution took place on Thursday, July 23, at the new offices, No. 35, Southampton-row, Bloomsbury-square, W.C. Mr. William Shepherd (President) occupied the chair, and amongst those present were Messrs. B. E. Nightingale, Thomas Stirling, W. J. Mitchell, W. Scrivener, E. B. Ellis, and other friends of the charity.

Major Brutton (Secretary) read the report, which stated that seven pensioners had died and four others had been elected, there being now twenty males and thirty-four females dependent upon the funds. The Committee took the opportunity of earnestly impressing upon the subscribers and those who had not hitherto assisted that to maintain so many pensioners liberal annual subscriptions and donations were requisite from the members of the building and kindred trades. Unless this was complied with, the number of pensioners would have to be reduced, or the yearly stipend curtailed. It was also the case that the usual annual contributions did not admit of the election of all who by force of necessity were compelled to seek the benefits of the charity; and should the income not be increased this difficulty could not be overcome. The receipts for the past year had been sufficient to meet the expenditure, largely owing to the exertions of the President (Mr. Shepherd), to whom the Committee expressed their obligations. The annual dinner would take place, by the favour of the Worshipful Company of Carpenters, in their Hall, on Thursday, November 5, when Mr. B. E. Nightingale, who had consented to accept the position of President of the Institution for the ensuing year, will preside.

The Chairman moved the adoption of the report, which was seconded by Mr. Thomas Stirling, and unanimously agreed to.

The Chairman also proposed the following addition and amendment to the rules:—Rule II., section 1 a: "A firm shall exercise all the advantages of donations given in its own name, so long as any one of the original donors remains in the firm."

The motion was duly seconded, and agreed to *nem. con.*

Cordial votes of thanks were passed to the President, Vice-Presidents, Trustees, Treasurer, Committee, and Auditors.

The Chairman then proposed that Mr. B. E. Nightingale be the President for the ensuing year.

Mr. W. Scrivener seconded the resolution, which was cordially received, Mr. Nightingale promising to do his utmost for the interests of the charity.

A hearty vote of thanks was passed to the Chairman for presiding, and the meeting separated.

Sole Church, Norway.—Sole Church, near Stavanger, on the west coast of Norway, is now one of the most interesting sights in the country. This old edifice was to have been pulled down in 1881, but it was purchased instead by a well-known Norwegian marine painter, Herr J. Bennetter, who, with great skill, converted it into an artist's residence, having retained in the work all original architectectural features. It is not known when the church was built, but it existed, so documents go to show, in 1125. It is believed to have been built by a great converting Norse chieftain, Esling Skjalgson, and the style of architecture and finish point to English influence. Already some 2,500 tourists have visited the venerable edifice and Herr Bennetter's most curious residence.

Correspondence.

To the Editor of The Builder.

POLISHING UP GRANITE.

Sir,—Can you kindly tell how I can bring up the face of some polished granite which has got a little chipped and very dull, or what is generally used for polishing the same?

A Reader of "The Builder."

*** The face of granite which has got very dull may be repolished by the application of putty powder. If it is a cheap polished granite, however, which has only a "skin polish" on it (*i.e.*, the face having been polished before it was properly ground down), or if the dulness is due to bad weathering, the best thing to do is to first apply fine flour-emery, and then to bring out the polish by using putty powder. In any case, the stone must be rubbed very hard indeed, and for a long time. The putty powder must be applied with thick felt, and the face of the stone well cleansed beforehand to get rid of grease, &c.

COAL-CELLARS.

Sir,—As regards the economy of laying in a large store of coal for household use, referred to by a correspondent from the country in your "Notes" of July 25 last, I had a capacious coal-cellar constructed, of sufficient capacity for laying in a store of coal for the winter half-year. My experience, however, was that it was not an economical plan to lay in a large store, inasmuch as there was a large residuum of dross and coal-dust left, which was unfit for household purposes. I have since restricted myself to ordering two or three tons at a time, and find it answer better than getting in a large store. The accumulation of dross may have been occasioned by the servants breaking up the larger blocks within the cellar in order to fit them for the immediate purpose. If the coal could be procured in pieces of a nearly uniform size there would be no necessity for manipulating it in the cellar, but can this be done?

Householder.

The Student's Column.

MARBLES.—V.

ROMAN MARBLES (*continued*).

THE Romans raised and polished enormous quantities of serpentine and other similar kinds of stone. Perhaps the best known of these is the Verde Antique, or Lapis Atracius of the ancients, which is, generically, a serpentinous and calcareous breccia having angular patches of dark green; a marked character is the delicate shading-off of the edges of the white fragments into the light-green base or matrix. Another variety has a green paste, in which there are fragments of black and white; the rarest kind is said to have blue in it. There seems to be much difference of opinion as to the site, or sites, of the ancient quarries. To any one who knows much about serpentine and the manner in which it occurs in the field, the conflicting statements are not to be wondered at. Serpentine of divers characters may frequently be obtained from one quarry, and the rock is so variable in its structure and colour, even in small distances, that any attempt to locate the old Roman workings, short of actual proof, must of necessity be more or less theoretical. Add to this the peculiarities of a breccia,—a form in which old "serpentine marble" sometimes occurs,—and the difficulties become even more intensified. As Professor Hull says, Verde Antico is probably of no special description; the name applies to many kinds of green serpentinous rock used by the Romans, sometimes brecciated or variously veined and derived from many different sources. As an instance of this, the above-mentioned authority refers to the four columns of this marble in the cabinet of gems, Galleria degli Uffizi, in Florence, which differ much from one another in the structure of the material.

The true Verde Antique is said to have come from Thessaly, and to have received its Latin name (Lapis Atracius) from Atrax, near which town the quarries were situated. Atrax is near the river Peneus, about ten miles from Larissa, and the stone was said to have been worked on the open plain. A quarry in stone, not unlike the typical material, was found by Mr. Brindley in Thessaly, but not in this situation. In the British Museum there is an interesting variety of Verde Antique with fine red patches, forming a short pedestal under a Parian head of Apollo Musegetes.

Another well-known Roman serpentine which came from Egypt is the Lapis Augustus, or Verde Ranocchia Ondato. It was used by the Egyptians for small figures, and sparingly by the Romans for articles of *vertu*, but it was not employed in Rome until the time of Augustus. The stone is dark green in colour, with lighter green marks mixed with a yellowish tint, always orbicular. It is probable that the Lapis Tiberianus of Pliny,* the Verde Ranocchia Fiorito of Corsi, came from the same quarries in Egypt; whilst the stone also received other names depending on variations of the markings. In an account of his Egyptian researches, Mr. Brindley states† that at the station of Deir, workshops existed in which small articles in porphyry and in this serpentine were wrought. Mr. Mitchell, a geologist, found the Verde Augustus in a mountain near these ancient workshops whilst making a collection of specimens of the rocks of that region for the museum at Cairo.

Lapis Amiantus, or Amianto, an asbestos, and Lapis Æquipondus, or Pietra Nefritica, a hard, compact stone of dark green colour, are also examples of serpentinous rocks quarried by the Romans.

This seems to be the place to describe Lapis Lazuli, one of the most superb stones used by the ancients. Typically it is of an ultramarine or azure blue, sometimes being permeated by veins of iron pyrites which form streaks of "gold;" and another kind is sky-blue tint, interspersed with white. This historic stone is composed, chemically, of silicate of alumina, lime and soda, with iron and sodium, probably as sulphides. Sulphuric acid is also usually present. The colour is probably due to the presence of the sulphide of sodium and iron. The mineral is vitreous in lustre, with an uneven fracture, is translucent or opaque, and its specific gravity varies from 2·38 to 2·45. It is interesting to note that when subjected to careful powdering and washing, to free it from all foreign admixtures, it forms the pigment ultramarine; but an artificial ultramarine has for many years been prepared, and the pigment is now very much cheaper than when Lapis Lazuli was solely used in its manufacture. A variety of the stone was called Cyanos by the Romans, and Pliny describes the best as coming from Scythia, the next best from Cyprus, and the worst from Egypt, and he says it has the appearance of being powdered with golden dust. Lapis Lazuli was also known as Sapphirus, however, and the same ancient philosopher states that the best of this kind came from Media; to-day it is found in Persia, Bucharia, &c. Professor Aitchison mentions that a pavement of this material was found in one of the halls of the Thermæ of Titus, in the Pontificate of Innocent X. (1644—1655).

Labrador Spar, or Lapis Mithrax, came from Persia and the mountains of the Red Sea, according to Pliny, but it does not seem to have been very extensively used by the Romans.

Malachite, or Molochites, a green carbonate of copper, was also employed as a marble by the ancients, though it must have been used only for special purposes on account of its rarity.

Fluor Spar, or Murrha, was also highly esteemed. Pliny states that it was first introduced to Rome by Pompey in his three triumphs over the Pirates and the Kings Mithridates and Tigranes. He further says that it came from the empire of the Parthians and Carmania, *e.g.*, from Tartary and Persia. This seems to be much nearer the truth than the assertions of certain other writers of more modern times, who would have us believe that the stone is the Derbyshire Spar, or "Blue John." As a matter of fact, Fluor Spar is a tolerably common mineral in many parts of the world; it is frequently found associated with galena (lead) and other ores.

A false jasper, known as Marmora Tauromenitana, or Diaspri Teneri di Sicilia, which came from Taormina, in Sicily, was worked in Roman times; and we have seen that alabaster was also extensively employed.

Turning now to the breccia marbles, we learn that many varieties found favour with the Roman conquerors, which is not surprising, as the material, generally speaking, presents such a striking appearance. The most noteworthy of these, perhaps, is the Breccia di Verde, or Brèche Universelle, which is an exceedingly handsome stone, made up of fragments of rocks of various colours cemented together in a compact mass. The more common pieces included are greenstone, gneiss, porphyry, clay-slate, flinty-slate, serpentine, and some pebbles of green felspar. The matrix, or cementing material is slightly calcareous, varying from all shades of green to purplish red. This rock is referred to sometimes as the Breccia d'Egitto, and is said to be found in the valley of Cossim, and elsewhere in Egypt. The magnificent sarcophagus of Nectanebo I., in the British Museum, is a dark greenish grey breccia of this class. The included fragments, angular and sub-angular, are bright green, yellowish green, yellow, brown, black, and granitic. Those of the lighter colours are apparently siliceous. The matrix is dull green, speckled with minute lighter coloured pieces of the same character as the larger fragments. This sarcophagus is covered with delicate hieroglyphics inside and out, but is at present so dark toned except in certain places, that the material might readily be mistaken for some one of the volcanic rocks.

Quarries in Breccia di Verde are situated at Hammamat, about two days' camel ride from Keneh, on the route to Koseir, on the Red Sea. The formation reposes on slates, in conformable thick-bedded strata, becoming more horizontal as it recedes from the central granitic axis. The quarries were worked by the ancient Egyptians, and are believed to have been visited by Kings Cambyses and Darius, from the circumstance of their cartouches being cut on the rock. These and other hieroglyphs are still as sharp and legible as though they were only recently cut in. After the Roman occupation of Egypt, the quarries were very extensively worked, and there is a considerable quantity of this breccia in Rome and Constantinople. It is said to be very difficult to tool, and more troublesome to polish, owing to the cementing material frequently being harder than the embedded fragments.

Of the numerous other breccias, we may only refer to the following:—

Marmor Lydium, or Rosso Brecciato, has a red ground with pieces of vivid white. The sites of the quarries in this, as in the other breccias about to be mentioned, are either unknown or very problematical.

Breccia Gialla Ombrata has an orange matrix, with fragments of deeper colour, always triangular in form; but the colour of the pieces varies, and it has received its name from the fact that the bands of yellow where they touch the fragments are darker.

Breccia de Sette Basi, according to Professor Aitchison, A.R.A., is so-called from its having been found at the Villa of Septimus Bassus on the Appian Way. The ground mass is invariably purple, with oblong pieces of white, yellow, and red.

Breccia Corallina is composed of small white fragments of coral, in a paste of bright red; whilst Breccia Traccagnina has variously coloured grounds enveloping pieces of different tints; the latter marble has received its name from its supposed resemblance in pattern to the mask of a harlequin.

The Romans worked many fine shell marbles, but we have only space to allude to a few of the more prominent of them. They are commonly known in Italy as Lumachella, which term appears to be applied to nearly all marbles exhibiting an appreciable percentage of shelly matter.

Marmor Megarense, or Lumachella Bianca Antica, came from Megaris, between the Saronic and Corinthian gulfs. It is white and was used for columns and statues.

A very well-known material was the Marmor Schiston, or Broccatello Antico, which is quarried at the present day at Tortosa, in Catalonia. It is of golden yellow, inclining to red and pale purple, with occasional irregular white spots.

A shell marble, said to have come from Agra, in India, is known as Lumachella d'Astracane. Normally it is a yellow or pale greenish yellow, marked with red; but there are white and flesh-coloured varieties.

The Occhio di Pavone is a red, purple greyish-white stone, with a black ground. The shells cut through are white, and often resemble eyes, but sometimes they are red.

Cornu di Ammone is a generic term applied to those marbles which contain the remains of *Ammonites* in abundance.

Slates.—Lapis Ligusticus and Lapis Thebaicus were occasionally employed for artistic purposes by the Romans.

* Pliny. Nat. Hist., lib. XXXVI., cap. 11.
† Brindley. Trans. Roy. Inst. Brit. Arch., vol. IV., n.s. (1888), p. 24.

GENERAL BUILDING NEWS.

Re-opening of the Forest Church, Guernsey.—This interesting old church, dedicated to St. Margaret, and which is stated to have been consecrated in the year 1163, was re-opened on July 15, after extensive restoration. A great many years having elapsed since the late interior arrangements of the church had been made, and the box-pews and the floor being in a most dilapidated state, it was last year determined that the church should undergo a general restoration. A committee was formed, and subscriptions raised in order to carry out the much-needed work. Messrs. R. Knill Freeman, F.R.I.B.A., and S. Denison Robins, architects, of Newcastle-on-Tyne, were communicated with to prepare plans for the proposed improvements. Their designs were accepted by the Committee. The chief feature of the restoration is the lowering of the floor-level several inches. This has been done in order to expose to view the moulded bases of the pillars, which must have been covered up for some centuries. Many interesting relics were found during the excavation, chief among these being cannon-balls and silver-coins. The floor, which formerly consisted of planks fixed on joists reposing on the ground, has been renewed with a parquet-floor laid in pitch, a foundation of concrete having been previously made. The seating throughout, the choir-stalls and reading-desks are from the designs of Mr. S. D. Robins, and have been made in the workshops of Mr. Robilliard, the contractor, the material used being pitch-pine. The communion-table and lectern, which have been designed by the architects, are in oak, made by Messrs. Robson & Sons, of Newcastle-on-Tyne. The pulpit, the gift of the Misses Mansell, Le Chêne, Forest, was made by the above firm. The whole of the windows have been reconstructed, but the design and details of the old windows have been followed as much as possible, and they are now filled with stained glass, the work being executed by Mr. G. J. Baguley, of Newcastle-on-Tyne. Mr. W. Rabey, of Guernsey, is responsible for the masonry and plastering work, and the remainder of the contract has been carried out by the chief contractor, Mr. W. T. Robilliard, of Victoria-road, Guernsey.

St. Thomas's Church, Brampton.—The Bishop of Southwell has consecrated the new chancel, and an addition to the churchyard, at St. Thomas's Church. The erection of the chancel has entailed an expenditure of about 1,600*l*. It is almost twelve months since the contractor (Mr. Rhodes, of Brampton) began the work from designs prepared by Messrs. Naylor & Sale, of Derby. Under the old conditions, both organ and choir stalls were in the body of the church, but now more commodious stalls have been provided in the chancel, and a spacious organ chamber has been built on the left-hand side. The roof is arched, and stands higher than the main body of the church. It has been built in this way to allow, at some future day, the alteration to a similar shape of the present inelegant square roof.

Yacht Pavilion, Monks' Ferry, Birkenhead.—The old and dilapidated sheds on the pier of the Royal Mersey Yacht Club, at Monks' Ferry, Birkenhead, have been replaced by a new and commodious structure, which was recently opened by the Mayor of Liverpool. The new building consists of a club-room or pavilion, measuring 30 ft. by 19 ft., and having, overlooking the river, a semi-octagonal front, with large windows and glass doors. From this there is obtainable a fine view of the races of the smaller-classed yachts and open boats. In front of the pavilion is a verandah with seats. Behind the pavilion, a commodious dressing-room and lavatory, measuring 24 ft. by 7 ft. 6 in., has been provided for members of the club to change their clothing after boating. At the back of the dressing-room also is a large boathouse, measuring 35 ft. by 15 ft. The boathouse is paved with concrete, and is to be used to store the racing boats belonging to members of the club, and suitable racks are provided for spars, oars, &c. The building has been constructed from the designs and under the personal superintendence of the rear commodore (Mr. Charles H. Beloe, C.E.), who presented his professional services to the club. The contract was entrusted to Mr. T. W. Rudd, of Liverpool, the cost of the building being about 450*l*.

Re-opening of Royston Church.—The enlargement and partial renovation of the interior of Royston Church having just been completed, the re-opening and dedication of the new parts by the Bishop of St. Alban's took place on the 23rd ult. The chief feature of the work has been the extension of the church eastward, with a new chancel, 34 ft. long by 22 ft. wide, with sittings for forty choristers; the extension of the south aisle by the side of and opening into the chancel by arches, thus affording extra sitting accommodation for sixty persons; on the north side of the new chancel an organ-chamber and vestry have been erected. The extension of the nave where the old chancel was affords additional sittings for forty-three persons, and as the choir will be seated in the chancel, and the organ has been removed, about seventy sittings will be available in the western gallery. The new chancel is entered by two steps beneath a lofty Early English arch, about on a line with an old east window. The new east window is of three lights, with clustered and detached shafts, and dog-tooth moulding to correspond with the old thirteenth-century window which has been restored on the north side. Three memorial-windows have been placed in position,—the east window and one in the south aisle, by Mayer & Co., of Munich and London, and one in the south side of the chancel, by Messrs. Pepper & Boyes, of London. Mr. J. K. Colling was the architect of the new work, and Messrs. Cornish & Gaymer, of North Walsham, the contractors.

Board School, East Ardsley, Yorkshire.—On the 25th ult. Mr. E. Simpson (chairman of the East Ardsley School Board) laid the memorial-stone of a new Board School. The school will have two elevations, abutting respectively on Stewart and Mill-lanes. The plans are by Mr. J. Lane-Fox, architect, Dewsbury, and the building will be of hard stone from the Holmfirth and Lightcliffe quarries.

Consecration of Church, Haydock, Lancashire.—On the 25th ult., Bishop Royston consecrated the new church dedicated to St. James, at Haydock. Oak has been mainly employed in the erection of the building. The walls consist entirely of this material, showing the timber both inside and out. Between the timber externally birch filling has been used, and internally cement has been brought into requisition. The principal entrance to the church is by a porch at the west end, and passing through the doors a nave 75 ft. long by 39 ft. wide is entered. This is divided at the south side from an aisle 12 ft. wide, and an arcade of seven bays, which is also carried out in timber. On the north side a similar arcade connects the old and new churches together, and although the two structures may be made to form one large place of worship, should it be required, they are practically two separate buildings. Altogether there is now accommodation for about 600 worshippers. Externally there is a tower with an octagonal spire, and belfry chamber with peal of bells. The contractors were Messrs. Thomas Brown, of Chester. The architects were Messrs. Douglas & Fordham, of Chester.

School Buildings, Woodhouse, Leeds.—On the 25th ult., the memorial-stones of a new Sunday school in connexion with the Wesleyan Chapel, Woodhouse, Leeds, were laid. The school-room will be 62 ft. by 38 ft., lighted by windows on three sides, and with open timbered roof, 25 ft. high in the centre. At one end there is a raised platform, and there are separate entrances for boys and girls, with glazed screens to form lobbies. Behind the platform there is a corridor, communicating with four class-rooms, on the ground floor. On the upper floor three other class-rooms are arranged, as well as a ladies' sewing-room, 25 ft. by 17 ft. There are tiled lavatories and other conveniences adjoining. An infants' room, to accommodate 180, has a raised gallery at one end, and also a separate entrance. A kitchen, an apparatus-room, and other conveniences are in the basement. Fresh air will be admitted to all the rooms by expanding tubes, and the vitiated air drawn out by flues connected with exhaust ventilators. In addition to open fireplaces, most of the class-rooms will be heated by the low-pressure hot-water system. The buildings are being erected with pressed bricks, and Harehills stone dressings. The internal woodwork will be of pitch pine and varnished, and the roofs covered with Bangor slates. The cost of the buildings will be about 2,250*l*. The architect is Mr. G. F. Danby, of Leeds. The contractors are Mr. P. Staither and Messrs. W. Mason & Son.

Children's Hospital, Hull.—On the 22nd ult. the new Victoria Hospital for Poor Sick Children, situate in Park-street, Hull, was opened by the Marchioness of Salisbury. The Park-street elevation of the new hospital is in the Gothic style, of an Early French character, and is built of red stock bricks and Ancaster stone dressings. The principal entrance is from Park-street, and it opens into an approach to the vestibule, on the right of which are the Board and the matron's rooms, while on the left is a suite of rooms for the use of the house surgeon. Through a glazed door on the west side is the corridor connecting the official department with the hospital proper. The hall, which is well lighted, is in direct communication with the convalescent room, 37 ft. by 16 ft., the matron's stores and the nurses' retiring-rooms. At the rear of the building is the kitchen, with its stores, scullery, and servants' sitting-rooms. The laundry is disconnected from the main building, and access is gained to it by a covered passage, through the kitchen department, from which also runs the staircase to the isolation ward. Ascending to the first floor by a stone staircase from the hall the principal ward (50 ft. by 22 ft.) is reached. It contains sixteen beds, and in close proximity are bath-rooms, nurses' duty-room (with an inspection window to the ward), service hoist, and linen store. At the head of the staircase are the matron's and nurses' sleeping apartments, and on the same landing the matron's office. Crossing the landing there are two wards facing Park-street, one of which contains six beds and the other twelve, and which are separated by a nurses' duty-room, having the usual inspection windows. A bath-room and linen-store are also placed near at hand. The ward on the second floor has accommodation for sixteen children, and possesses adjuncts similiar in every respect to the ward below. Directly opposite is the lobby, by which access is gained to the ward for patients who may need to undergo operations, while hard by is the operating-room, lighted by side and top-lights. On this floor also is the isolation ward, but it is approached only from the ground-floor by an enclosed stone staircase at the west end of the main building. This ward has four beds, with bath-room and nurses' accommodation. All the wards have floors of pitch-pine, walls finished with Parian cement, and windows glazed with plate-glass. The two large wards are heated with central stoves with descending flues. Beyond this, a supplementary system of hot-water pipes has been laid down for use in extreme weather. From Clarendon-street, the outdoor department (which constitutes an entirely separate building) is approached. Consulting, examination, and waiting-rooms are conveniently arranged, while to the north of these the dispensary and drug-stores are situated. In the rear of this block,—which has a frontage of red brick and Ancaster stone-dressings,—are the post-mortem room and mortuary. Mr. W. H. Bingley, of Hull, was the architect under whose supervision the work has been carried out, the plans having been prepared by Mr. Bingley and the late Mr. S. Musgrave. Messrs. George Jackson & Son, Hull, have been the contractors for the work. Mr. J. Halcrow was engaged as clerk of the works.

Messrs. Hayward Brothers & Eckstein's Foundry Extension.—A large extension to Messrs. Hayward Brothers & Eckstein's premises, under Messrs. Jarvis & Sons, architects, Trinity-square, S.E., has now been completed. This extension gives direct connexion to the extensive foundry erected about twelve months ago. The whole comprises a very complete block of premises, the showrooms, offices, erecting and fitting shops, the extensive foundry, the pattern-makers' shops and forwarding departments being carefully arranged to the three frontages, so that the raw materials come in at one side and the finished articles go out at the other side. There is a basement over the whole area, for lighting which Hayward's patent semi-prism lights have been used to the utmost, and although the width of the lights on the pavement is very narrow,—the patent lights being only used on two sides,—the result is that the basement is practically as light as the ground floor for many purposes. Several opportunities have occurred in the building for showing the best way to utilise Hayward's patent lights in the pavement and stall-boards, and by the ingenious manner of forming bulkheads so that the light is not obstructed. The premises are well worth a visit by architects and others, as many useful hints may be picked up. Mr. Willmore's business, of Cottam & Willmore, has now been completely amalgamated with that of Hayward Brothers & Eckstein, and the large showrooms filled with stable fittings of various kinds, besides all kinds of iron staircases, ventilators, patent lights, &c. In the erecting shops are many iron staircases of all widths and heights, both spiral and straight. This class of work has been very much in demand of late years, and the manufacture of iron fire-escape staircases has become increasingly brisk, in order to meet present-day requirements in the matter of precautions against loss of life by fire.

Restoration of Peterston-super-Ely Church.—The ancient church of Peterston-super-Ely was re-opened by the Bishop of Llandaff on July 23, after undergoing a thorough restoration and re-decoration under the superintendence of Messrs. Kempson & Fowler, architects, Llandaff. A stained-glass window in memory of the late Alderman Waring, C.E., has been erected in the east end of the chancel by Mr. C. Waring, and a new south chancel window filled with painted glass has been given by Miss Turberville Llewellin. The subjects are the Crucifixion, in the centre light, with St. Peter and St. David at each side, and in the south chancel window Abraham and Sarah. The windows have been executed by Messrs. Saville & Co., of Albany-street, London. A carved oak pulpit has been erected by the family of the late Rev. L. C. Lewis to his memory. New floors and steps have been laid in the chancel, and an oak screen has been erected across the chancel arch. The new chancel-seats are also in oak. The whole of the oak work and carving was executed by Mr. W. Clarke, of Llandaff. The plastering and wall decoration was executed from the architect's designs by Mr. Morgan, decorator, of Canton, Cardiff. The peal of six bells in the belfry has been re-cast and re-hung by Messrs. Taylor & Co., of Loughborough.

STAINED GLASS AND DECORATION.

Memorial Window to the late Mr. Joseph Gordon, M. Inst. C.E., Haltwhistle Church.—A stained glass window has just been placed in the parish church of Haltwhistle, Northumberland, to the memory of the late Mr. Joseph Gordon, who was for a few months Chief Engineer to the London County Council, and had previously been Borough Surveyor of Leicester. The deceased was a native of Haltwhistle. The window consists of a five-light Perpendicular window, and is the work of Mr. Kempe, of London. On the spectator's left is a figure of St. Cuthbert, one of the early Northumbrian bishops; and on the right is a representation of St. Oswald, the Northumbrian King, who defeated Cadwallader and his pagan nobles some-

where in the neighbourhood of the church which bears his name, near the line of the Roman wall and not far from the Wall village. In his right hand he carries a cross, the sacred symbol by which, as the Venerable Bede tells us, in his history of the Anglo-Saxon Church, he inspired his army with faith in the justice of their cause, and nerved with a courage and heroism which completely vanquished his foes. He holds a sceptre in his right hand, and on his head rests the crown of regal authority. The bishop wears a mitre, and in his right hand holds a crozier. The window, which is close to the pulpit, bears the following inscription:—"To the glory of God, and in loving memory of Joseph Gordon, C.E., who entered into rest November 9, A.D. 1889. This window has been erected by his widow and children."

WINDOW, DUNKERRIN CHURCH, TIPPERARY.—A stained glass window has just been placed in the east end of this church. The window consists of three lights and tracery, and contains the subjects of the Baptism, Resurrection, and Ascension of our Lord, under canopies in keeping with the architecture of the building. In the tracery is the figure of our Lord in glory, with surrounding angels. The work was designed and executed by Messrs. Warrington & Co., of London.

WINDOW, ALLOWAY CHURCH.—A memorial window has just been unveiled in the chancel of Alloway Church. The new window is in memory of Mrs. William Houldsworth, and consists of six lights and tracery. The window is divided by a substantial centre mullion into triplets. In the left, or northern, portion the subject illustrated is the "Raising of the Serpent in the Wilderness"; and in the right, or southern, portion the "Crucifixion" is portrayed, the type and anti-type being thus brought into contrast. Occupying a prominent position in the tracery are groups of angels bearing scrolls, on which are inscribed the words,—"As Moses lifted up the serpent in the wilderness, even so must the Son of Man be lifted up." At the apex of the window the exaltation of the Saviour is represented, and immediately below are groups of apostles, prophets, and martyrs, and other figures conveying the idea of the universal Church in the act of worship. At the base of the window are six Scripture scenes, in which women occupy a prominent place. The three on the left, under the "Brazen Serpent," are taken from the Old Testament—viz., "Miriam praising the Lord," "Ruth and Naomi," and "Hannah presenting Samuel." The three on the right, under the "Crucifixion," are taken from the New Testament—viz., "The House at Bethany," "The Salutation of Mary," and "Dorcas distributing to the poor." The window was designed and made by Messrs. Clayton & Bell, London.

WINDOW, NEWPORT, MON.—A three-light traceried painted-glass window for St. Woolo's Church, Newport, Monmouthshire, will be on view for the next fortnight at Messrs. Belham's, 155, Buckingham Palace-road, S.W. The subject is that of "Christ among the Doctors in the Temple." The design is by Mr. John P. Seddon, and the composition of figures by Miss Maud Seddon. The cartoons and painting on the glass itself are by Mr. H. Murray—Messrs. Belham's artist. The whole has been executed in Messrs. Rusts' antique glass.

FOREIGN AND COLONIAL.

FRANCE.—The municipality of Maisons-Laffitte intends to offer to its architect, M. Louis Dauvergne, on the occasion of the inauguration of the new mairie, a splendid bronze, "La Liseuse," by Mathurin-Moreau.——A statue of Méhul, the composer, is shortly to be inaugurated at Givet. It is by M. Croisy, and was exhibited in the Salon of 1890.——On Sunday last the railway line from Doullens to Albert was officially opened. It is about 30 kilomêtres in length, and forms part of a system of 312 kilomêtres which the "Société des Chemins-de-fer economique" is carrying out in the Department of Somme, and of which 250 kilomêtres are already in operation.——The town of Grenoble is organising, for next spring, a retrospective Fine Art Exhibition, which, thanks to the liberality of private owners in Dauphiné, promises to be a great success. The town of Grenoble being the centre of the glove-making industry, the Committee of the Exhibition proposes to exhibit all procurable specimens of ancient gloves, drawing especially on the treasures of the Cathedral establishments, which possess many remarkable examples of this nature. The proceeds of the exhibition will go to the formation of a fund for enriching the Museum of Grenoble.——At Bernay last Sunday there was inaugurated the memorial statue to Daviel, the oculist.——A painter of merit, M. Antonin Richard, Director of the Ecole Municipale de Dessin at Châlon-sur-Saône, has just died at that town.——We learn also of the decease of M. Lucien Schmidt, a painter born at Miellin, and who for a long time past lived at St. Quentin. He was a pupil of Flaudrin, and exhibited frequently at the Salon.

BERLIN.—As generally expected, the Emperor has nominated himself to act as assessor on the second "limited" National Monument Competition. He intends to settle the matter as soon as he returns to Berlin from his summer trip, and has requested the Ministers whose departments will be concerned in the matter to arrange their summer furloughs accordingly, so that they may be present on his arrival.——Anton von Werner, the President of the Prussian Royal Academy, in a lengthy address on the prize-day of the Academy Schools, laid great stress on the art and science of the world being absolutely international. In the course of the address, he referred with pleasure to his recent stay in England during the Court festivities, and went on to express his great admiration for British art.——The Boissonet Bursary of the Royal Technical College has been given to Herr Seeselberg, whose duty it will now be to measure up Lund Cathedral in Sweden for the Prussian Government.——It may be noted that the great Column of Victory, erected on the "Koenigs Platz," after the Franco-Prussian War of 1870–71, does not stand perpendicular any more, but leans over to the S.W. A fine omen for superstitious Frenchmen.——The number of railroad accidents in Prussia this month has been steadily increasing, scarcely a day passing without a more or less serious accident on one of the lines. We hear that the new Minister of Public Works is about to take very energetic steps in the matter. The public seem to have lost faith in the railway administration, and the year's traffic receipts will be far under the average.

CREFELD.—The usual rule of erecting equestrian statues to the deceased Emperor William is to be broken through here in a most sensible way. The town intends erecting a new museum building in honour of the old Emperor, calling it the "Kaiser Wilhelm Museum." 300,000 marks have been collected for the purpose, and a competition for the design (prizes 4,000, 3,000, 1,500 marks) opened.

FORBACH.—The new church at Forbach, in the Murgthal, commenced in 1886 from the designs of Herr Adolf Williard (consulting architect to the Archiepiscopal Buildings Administration of Carlsruhe), has just been consecrated by the Archbishop of Freiburg. The church is in basilica form on plan, and more or less Romanesque in type in regard to detail. The apse has canted sides, planned not as usual on the octagon, but on the dodecagon, and approached internally by a flight of steps from the church. The side aisles are narrow ones for passage only. The arcade is a round arched one, and the central area roofed by a semicircular quadripartite vault. The church is richly decorated with stained glass and with paintings of the stations of the Cross, &c. The main interior material is red sandstone, the colour of which formed the basis or ground of the colour system of the decoration. The figure paintings on the walls include, round the chancel arch, the Holy Trinity and the Heavenly Powers; on the arch over the doorway an Annunciation, and others which are not all complete as yet. The organ, decorated with a statue of St. Cecilia, by Herr Dietsche, is built by Voit & Sons of Durlach, with thirty stops, at a cost of 850*l*. The bronze relief over the high altar was designed by the architect, and executed by Feurstein, of Freiburg; the wall-paintings by Herr Conrad Schmider of Carlsruhe; the glass by Herr Beiler of Heidelberg, the carpentry and ironwork by local workmen. The total cost has been from 18,000*l*. to 20,000*l*.

WARSAW.—The so-called "international" competition for the design of a new terminus station to the Vienna-Warsaw Railroad has been decided, and all three first prizes (3,000, 2,000, and 1,000 roubles) have been awarded to Warsaw architects; the first to Mr. E. Goldberg, the second to Mr. Joseph Huss, and the third to Mr. Ladislaus Kozlowski. For those who know on what a low level modern Polish architects stand the prize-list must look suspicious, however well the official list of jurymen assessing the designs was got up. The jury does not state how many designs were sent in, or from which countries, but we know that Vienna and St. Petersburg were represented by some good men. The result of this competition may be a warning to architects not to waste time on competitions in out-of-the-way countries.

ARCHÆOLOGY IN DENMARK.—At the instance of the Society for the Preservation of Ancient Monuments in Denmark, Professor Löffler has carried out some excavations around the celebrated Roeskilde Cathedral, resulting in the discovery of numerous graves, covered with lime slabs, dating from the first half of the thirteenth century.

MISCELLANEOUS.

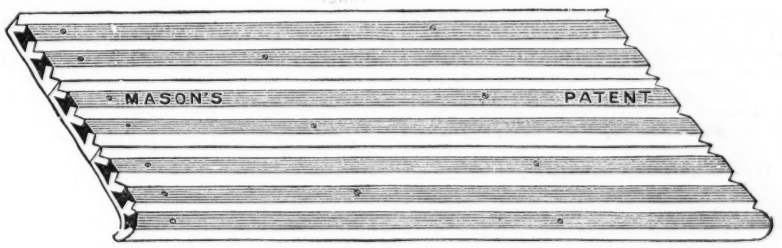
ARCHITECTURAL ASSOCIATION.—The annual excursion this year will be to Shrewsbury and the neighbourhood, the George Hotel, Shrewsbury, being the headquarters. The date is from August 10 to August 15. Among the places visited will be Buildwas Abbey, Much Wenlock, Morton Corbet, Haughmond Abbey, Stokesay Castle, Ludlow, Pitchford Hall, Acton Burnell, Condover, &c.

SEVERN NAVIGATION IMPROVEMENT.—According to the *Birmingham Gazette*, about 2,000 tons of rock and marl have now been raised from the bed of the river at the point two miles below Worcester, where the dredger is engaged. The state of the river continues favourable for operations. The average dredging has been increased to about 150 tons per day.

THE SWEDISH SAMPLE OFFICE IN LONDON.—The Export Association of Sweden has contributed a sum of 500*l*. towards the Sample Office of Swedish Manufacturers now being established in London, and to which we recently referred. Similar offices have also of late years been established in other important foreign towns.

THE GOTHENBURG EXHIBITION.—The architectural and building section of the Scandinavian Exhibition now being held at Gothenburg embraces 156 exhibits. It contains good collections of Swedish timber of various kinds, as well as of prepared wood goods used in building. There are two rooms showing the use of the material called pyrotopi, used for ornamentation of ceilings, &c. However, by far the best shows are those of Swedish tiles, brick, cement, and stoves, the latter being particularly worthy of attention, as well as specimens of wrought-iron ornaments.

MASON'S "UNWEARABLE" STAIR TREADS.—This is a newly-patented tread for office or railway-station stairs and other situations in which a great deal of wear takes place. The principle is to fix slips of lead, which give the foothold and prevent slipping, in grooves of chilled steel. The lead slips are sufficiently wide to give a hold for the foot, but not wide enough to be easily worn down between the steel ridges. There is so much difficulty in finding any stair surface for bearing traffic which will not in a short time wear and become slippery, that any carefully-considered attempt at an improvement deserves careful consideration; and this patent seems to have a good deal to recommend it. Other non-slippery substances may be used instead of lead to fill the grooves.



Lines thus ═══ represent Lead—other parts Chilled Steel, Brass, or other Hardened Metals.

NORSE STAVE CHURCHES.—The second part of the illustrated work on the Norse stave churches, by Professor L. Dietrichsen, has appeared in Christiania, and receives high praise from the Copenhagen *Dagblad*. There are now only twenty-four of these curious wooden structures extant in Norway, the principal being the one at Borgund, on the west coast, well known to tourists, and that of Gol from the Hallingdal Valley, purchased and re-erected by King Oscar at his villa near Christiania. A large number of these interesting churches have in recent years ruthlessly been pulled down for the sake of the material. The writer in the *Dagblad* is of opinion that the Norse stave churches are copies of the Anglo-Saxon stone churches, and particularly of the stave church at Greenstead in Essex, and that they were prompted by the introduction of Christianity from this country.

THE ELASTICITY OF NICKEL STEEL.—Having regard to the superior excellence of nickel steel armour-plates, which has recently been demonstrated, it may not be amiss to quote the remarks of a recognised French authority, M. Mercadier, bearing on the elastic properties possessed by nickel steel. This gentleman, who has spent many years in investigating the subject, is of opinion that steel alloyed with nickel is destined to play a still greater *rôle* in the metallurgical world. By means of the acoustic method which he has invented, M. Mercadier finds that steel containing nickel in the proportion of 25 to 100 is perfectly homogeneous and almost completely isotropic. The incorporation of the nickel with the steel in sufficient quantity, he adds, while increasing the homogeneity of the material, imparts to it an isotropy similar to that of the belles glaces of Saint Gobain. This result, interesting from a theoretical point of view, is also of importance in consideration of the practical lessons that may be deduced therefrom.—*Iron*.

COMPETITIONS, CONTRACTS AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised	Premium.	Designs to be delivered.
Club House, &c.	Aberdare Conser. Club	10*l.* 10s.	Aug. 20
*Rebuilding Courthouse and Offices	Corporation of Cork	100*l.* 60*l.* 40*l.*	Sept. 11
Drainage Scheme	Stone (Staffs.) L. B.	100 Guineas	Sept. 15
School Buildings	Northampton Sch. Bd.	Not stated	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Pipe Sewer and Tar-paving, Seven Sisters' Road	Tottenham Local Bd.	J. E. Worth	Aug. 4
House and Shop, Thorpe Hesley, near Rotherham	Jas. Milns	G. A. Wilson	do.
Main Drainage	Southowram (Yorks) Local Board	W. H. D. Horsfall	do.
Reservoir Work	Hawick (N.B.) Corp.	*Official*	do.
Street Making (26 streets)	St. George (Bristol) U.S.A.	T. L. Lewis	do.
Alterations, &c. to Schools, Stoke-on-Trent	Stoke School Board	R. Scrivener & Sons	do.
Semi-detached Villas, Pontypridd	.....	F. Gibson	do.
*Re-construction of Sewer	Mile End Old Town Vestry	J. M. Knight	Aug. 5
Extension of Goods' Yard, Westhoughton	Lanc. & York. Ry. Co.	*Official*	do.
Buffers and Couplings	India Office	do.	do.
Thirty-one Dwelling-houses, Ferndale, Pontypridd	North Street Building Club	M. Morris	do.
Alterations, &c. to Schools, Gilfach Goch	Llantrisant School Bd.	J. J. Evans	do.
School, Wheatley, Halifax	.....	Jas. Farrar	do.
*Goods Depôt, Bradford, &c.	M. R. Co.	*Official*	Aug. 6
Refuse Destructor (Contracts 3 and 4)	Bristol U.S.A.	F. Ashmead	do.
Timber Fencing, Canon's Marsh	do.	do.	do.
Sewering, Levelling, Channelling, &c.	King's Norton U.S.A.	R. Godfrey	do.
Swimming and Turkish Baths	Warrington Corp.	T. Longdin	do.
Farmhouses and Buildings, Taff, Fawr Valley	Cardiff Corporation	*Official*	do.
Two Culverts	Blaydon Local Board	Michael Hawdon	do.
Alteration of Two Shops, Bull-green, Halifax	.....	Jackson & Fox	do.
Market House, Corn Exchange, &c.	Gainsborough Loc. Bd.	D. G. Macdonald	do.
*Main Outfall Sewage Works	Ystradyfodwg Loc. Bd.	J. W. Jones	do.
*Painting Workhouse	Westminster Union	J. Waldram	Aug. 7
Sewerage Works	Sheffield Corporation	G. Alsing	do.
*Making, Draining, &c. New Road	Silvertown, Canning Town, &c. Land Co.	W. Davies	Aug. 8
Drainage, Police Station, Kington	Herefordshire Standing Joint Committee	*Official*	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Town and Spire to Church, Eastwood, Rotherham	Rev. W. Pilkington	.....	Aug. 8
*Road Materials	Folkestone Corp.	*Official*	Aug. 9
Six Houses, Johnny-lane, Sowerby	Luddenden Foot Indus. Soc. Lim.	S. Wilkinson	Aug. 10
		H. A. Alexander	do.
*Construction of Road and Sewer	Madras Ry. Co.	*Official*	Aug. 11
Wheels, Axles, Tyres, &c.	Stafford Corporation	J. F. Bell	do.
Ironwork for Roof at Gasworks	do.	do.	do.
Coal Stores	G. W. R. Co.	*Official*	do.
Steel Rails (1,500 tons)	Admiralty	do.	do.
*Battery and Drill Shed, Brightlingsea	Barking Town L. B.	C. J. Dawson	Aug. 13
*Broken Granite and Kentish Flints	Borough of Brighton	F. J. C. May	do.
*Shops, Lavatories, &c.	do.	do.	do.
*Glazed Stoneware Drain Pipes	Norwich Corporation	P. P. Marshall	do.
*Completion of New Hospital	Worcester C. C.	H. Rowe	Aug. 14
Petty Sessional Court, Cells, &c	War Department	*Official*	do.
*Painting Works, Netley Hospital	Leeds Corporation	do.	Aug. 15
Building Work at Gasworks, New Wortley	Sutton - in - Ashfield L.B.	G. Hodson	Aug. 17
*Service Reservoir	Bucks C. C.	*Official*	Aug. 18
*Police Station, &c.	Islington Vestry	A. Hessell Tiltman	Sept. 12
*Public Baths and Washhouses	.....	T. Waring & Son	No date
Two Houses, Stables, &c. Eldon-road, Cardiff	South Wales Cement Co.	*Official*	do.
Sinking and Lining Well, Penarth	.....	Johnson & Crawford-Hick	do.
Alterations and Additions to Church, Stockton-on-Tees	T. E. Farmery	.....	do.
Six Houses, Beeston-hill, Leeds	.....	.....	do.
Pulling Down and Re-erecting Sleights-hall, near Whitby	A. E. Donkin	Clark & Moscrop	do.
Business Premises, North Broomhill, Durham	Broomhill Co-op. Soc.	*Official*	do
Alterations and Additions to Auction Mart, Dumfries	R. Harrison & Son	J. Graham	do.
Weights and Measures Office, Kirkgate	Leeds Corporation	*Official*	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary	Applications to be in
*Clerk of Works	Willesden Local Bd.	3*l.* 3s.	Aug. 7
*Sanitary Inspector, &c.	Boro of Bridgwater	200*l.* to 250*l.*	Aug. 10
*Junior Examiner	Civil Service Com.	.....	Sept. 3

Those marked with an Asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv., vi., *and* viii. *Public Appointments, p.* xviii.

THE VICTORIA CHANNEL EXTENSION, BELFAST, was opened for public traffic the other day. According to the Belfast correspondent of the *Times*, the channel as now formed is an extension of the old Victoria Channel which was opened by her Majesty in 1849. The extension seawards is for a distance of almost four miles. The new channel is in width 300 ft. The depth of water secured within the 300 ft. is 17 ft. at low tide and 25 ft. at ordinary high tide. With the most powerful machinery available upwards of five years have been spent at the task. The cutting of the channel was not intrusted to a contractor, but was done by the Commissioners themselves, from the plans and under the direction of Mr. Salmond, the engineer-in-chief, and Mr. Redfern Kelley, chief assistant. The construction of the four lighthouses which light the channel was placed in the hands of Mr. W. J. Doherty. Mr. James Musgrave, the Chairman of the Harbour Board, said that the channel was three miles long, and the Parliamentary estimate of the cost of the work was 130,800*l.*

BOOK SALE.—The library of Mr. T. Slaney Eyton, of Walford Hall, Shrewsbury, was sold at Messrs. Sotheby, Wilkinson, & Hodge's auction rooms on the 24th ult. It included an unusually fine collection of illustrated archæological and topographical works, many of them on large paper, uncut, and in their original bindings. Some of the prices realised were as follows:—Quarto: G. Lipscombe's "History and Antiquities of the County of Buckingham," 4 vols., 1847, 6*l.* 10s.; Pennant's "London, Westminster, and Southwark," with over 200 portraits and views inserted (from Lord Farnborough's library), 2 vols., one of 200 copies printed in 1814, 5*l.* 2s. 6d. Folio: Lysons' "Roman Antiquities in England," 3 vols., 156 plates, mostly coloured, 1813-7, 6*l.* (Quaritch); Lysons' "Roman Antiquities found at Woodchester," 1797, 1*l.* 16s. (Quaritch); Lysons' "Gloucestershire Antiquities," 110 plates, 1804, 2*l.* 5s. (Quaritch); Dugdale's "Monasticon Anglicanum," with additions by Ellis, Caley, and Baudinel, 8 vols., 1817-30, 22*l.* (Edwards); J. Nichols's "History and Antiquities of the County of Leicester," 8 vols., portraits, maps, and plates, 1795-1811, 84*l.* (Sotheran); Sir R. Hoare's "Modern Wiltshire," 6 vols. in 4, maps and plates, 36*l.* (Quaritch); S. Shaw's "Staffordshire," 2 vols., large paper, royal fo., 1798-1801, 30*l.* (Sotheran); Manning and Bray's "Surrey," 3 vols., large paper, royal fo., 1804-14, 27*l.* 10s. (Sotheran); R. Surtees's "County Palatine of Durham," 4 vols., 1816-40, and J. Raine's "History and Antiquities of North Durham," 1852, 24*l.* 10s. (Walford); J. Hutchins's "Dorset," 2 vols., map, plates, and pedigrees, 1774, 1*l.* 14s. (Rimell); R. Thoroton's "Nottinghamshire," map and plates by Hollar, with extra plates, bound in morocco by Zaehnsdorf, 1677, 5*l.* 5s.; W. Woolnoth's "Graphic Illustrations of Canterbury Cathedral," large paper, plates on India paper (in duplicate), 1816, 18s.; George Ormerod's "County Palatine and City of Chester," 3 vols., large paper, one of sixty-five copies, arms coloured, &c., a subscriber's copy in the original ten parts, royal folio, 1819, 24*l.* 10s. (Sotheran); J. E. Cussans's "Hertfordshire," 3 vols., map and plates, 1870-81, 7*l.* 5s.; Dugdale's "Warwickshire," one plate damaged, Coventry, 1765, 2*l.* 5s.; Borlase's "Cornwall," with vocabulary, Oxford, 1754, and a "Natural History of Cornwall," *ib.*, 1758, 1*l.* 12s.; and H. Lloyd's "Historie of Cambria," as continued by D. Powell, black letter, 4to., by R. Newberie (no date), 2*l.* 10s. Other lots comprised R. R. McIan's Scots Clans, &c., by J. Logan, 2 vols., royal folio, large paper, plates coloured, Ackermann, 1845, 10*l.* 15s.; Hogarth's works from the original plates as restored by J. Heath, with J. Nichols's text, 116 plates, atlas folio, 1822, 4*l.* (Quaritch), and J. Gillray's works, from the original plates, 2 vols., 1847, 3*l.* (Quaritch); and Chippendale's "Gentleman and Cabinet-maker's Director," 15*l.*

INDUSTRIAL PROGRESS IN JAPAN.—From a report by the French Consul at Yokohama, Japan has made very great industrial progress in recent years, a large amount of capital having been invested in manufactories. Many railways have been constructed, too, there being 2,100 kilomètres at the end of 1889, whilst concessions have been granted for another 1,400 kilomètres. Electricity in all its branches is also being largely introduced, whilst in the larger towns waterworks and extensive harbour works are in course of being erected, most of them being constructed by English engineers.

A TRAM-CAR STARTER.—The *Times* recently described a useful and humane invention which, we hope, may prove to be successful. As will be well-known to many of our readers, numerous attempts have been made to aid tramcar horses at starting by giving an initial impulse to the car by mechanical means, usually stored-up energy. The latest attempt to solve the problem has outstripped, it is asserted, its predecessors in the amount of work it does and the perfect way in which it does it. This is the tramcar-starter of Messrs. Hooker and Crowden, a demonstration of which was given at Chiswick recently. Nor is it a starter only; it is a brake also, and by causing it to act as a brake it qualifies itself to act as an automatic starter. The apparatus consists of a pair of powerful coiled springs so arranged and connected by gearing with one of the axles of the car that upon the driver's pulling a small lever in one direction the revolving axle causes the spring to be coiled or wound up, just as a watch is wound up. As the process of winding proceeds, the power of the coiled spring acts on the axle and wheels as a brake, and in time brings the car up. To start the car the driver moves the lever in another direction and releases the axle from the brake-grip, but so re-engages the spring and the axle that the power exerted by the spring in uncoiling itself acts on the axle and causes it, with the wheels, to revolve, and so to start the car. The car can be started in either direction, and the brake can be worked from each end of the car.

BIRMINGHAM LAW COURTS.—Mr. F. J. Barnes, the well-known Portland quarry owner, writes to say that the flagging of the great hall of the Courts is of Portand stone slabs supplied by him, and not of Yorkshire, as stated in our account.

LIVERPOOL PICTURE EXHIBITION.—The annual exhibition at the Walker Art Gallery will open on August 31 and close on December 12.

THE PAVILION ON THE NORTH CAPE.—The pavilion on the North Cape, mentioned in a former issue of this journal as about to be erected there, has now been completed and opened. The first to enter his name in the visitors' book was Prince Carl of Sweden and Norway.

CAPITAL AND LABOUR.

THE LOCK-OUT OF CARPENTERS AND JOINERS.—The conference between the masters and men, of which we spoke last week as having been arranged for, was held at the offices of the Master Builders' Association on Monday afternoon, and lasted nearly four hours. As a result, the masters offered the workmen these terms:—Forty weeks of fifty-two hours, and twelve weeks of forty-seven hours; overtime to be paid at the rate of 1s. per hour to eight o'clock, 1s. 4d. from eight o'clock to ten o'clock, and 1s. 6d. after ten o'clock. The men held a meeting on Tuesday, when it was resolved that the delegates should confer with their constituents before coming to a decision as to the acceptance of the terms. There seems to be a strong feeling on the part of many of the men in favour of arbitration. The dispute has now lasted thirteen weeks.

MEETINGS.

MONDAY, AUGUST 3.

Liverpool Engineering Society.—Excursion to the Dore and Chinley Railway.

TUESDAY, AUGUST 4.

Glasgow Architectural Association.—Mr. Allan Graham on "Roman Architecture." 8 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

11,344.—VENTILATING ROOMS: *J. Le Marchant Bishop.*—According to this invention, air-currents entering a room between the door or window and its jambs or frame are conducted upwards, and only permitted to escape at a sufficient elevation to protect the occupants of the room from draughts. A channel is formed at the lower ledge, with openings so made as to force the currents of air to travel in an upward direction.

12,414.—WHITE LEAD: *E. V. Gardner.*—An electrical and acid treatment is employed by this inventor to quicken the conversion of the blue lead into white lead.

13,078.—BRICK MACHINERY: *T. C. Fawcett.*—By this invention some improvements are designed in brick-making machinery acting with toggle-pointed levers for operating the pressing rammer, a yielding piston and a pressing plate being employed, dispensing with openings for the escape of the superfluous clay.

5,363.—ROAD-MAKING SLABS: *D. Nicoll.*—The slabs, which are the subject of this patent, are made with cells formed of corrugated fibrous substances, so placed as to give a better foothold for horses.

6,565.—PAINTING MACHINES: *E. Armitage and others.*—The machines here referred to are principally designed for painting fabric material, and are automatic in action, the fabric being treated in a continuous roll.

8,416.—Ventilating Cowl: *J. D. Fryer.*—According to this patent, a truncated cone is fixed inside a circular hood, with openings which direct the air on to the cone, and in forcing it upward create an up-draught.

8,425.—Fixing Joinery in Buildings: *J. Hartley.*—Brackets are built in the brickwork, and loose brackets screwed to the woodwork, the brickwork and woodwork brackets then being connected by dovetailing.

8,570.—Carpenters' Bench-dogs: *L. d'Auria.*—The bench-dogs are made in the form of a toothed cylinder, which may be elevated above the bench or dropped down flush with it, or stowed away underneath.

NEW APPLICATIONS FOR PATENTS.

July 13.—11,852, C. Cunningham, Clamping-tool.—11,883, J. Lloyd, Lock Window-fastener.

July 14.—11,906, J. Cohen, Window-sashes.—11,922, R. Garsides and A. Brummitt, Roofing-tile. — 11,935, E. Robbins, Buildings, Structures, Decorative Works, and Material therefore.—11,967, C. Jackson, Door-knobs. 11,968, H. & C. Stone, Machine for Raising, Lowering, Stacking, or Removing Timber, &c.

July 15.—11,979, H. Stephenson and J. Heap, Compressed Bricks.—12,049, W. Deeming, Sanitary Pipes, &c.—12,050, A. Culpin, Reversible Window-sashes, &c.

July 16.—12,086, J. Hart Davies, Blocks for Street Paving, &c.—12,028, C. Farrand, Ventilator.—12,102, F. Treacher and T. Linskill, Automatically Closing Doors. —12,112, T. Whetter and M. Seale, Controlling and Adjusting Sliding Sashes in Windows, &c.

July 17.—12,147, J. Morley, Water Waste Preventing Siphon Cistern.—12,155, C. Scriven, Closing Doors and Holding them in any desired Position.—12,158, W. Harpur, Door Furniture: Knobs with Adjusting Screws, Bushes, Spindles, and Washers.—12,184, J. Killick and G. Longhurst, Sheet Metal Roofing.—12,201, J. Larimer, Pillars or Columns for Building Purposes.

July 18.—12,219, W. Reagan and R. Longley, Composition for Plastering Walls, &c.—12,241, J. Sangster, Stone Sawing.—12,245. J. Layzell, Shooting Board for Planing the ends of Mouldings, &c., to any angle.

PROVISIONAL SPECIFICATIONS ACCEPTED.

9,788, W. Garner and T. Connaugton, Plumb-, Levels, &c.—9,819, W. Pain, Carpenters' and Joiners' Hammers —10,055, R. Gibson and W. Williams, Window Sash-fasteners.—10,063, G. Mellor, Sash-fastener.—10,102, A. Hancock, Screwdriver.—10,177, T. Starkey & Son, and W. Starkey, Springs for closing doors.—10,262, J. Howell, Lock and Clip-bolt Sash-fastener.—10,263, A. Cronske, Cleaning Walls and Ceilings.—10,270, R. Hodges and F. Lilley, Door-indicators.—10,462, A. Kellar, Sash-fasteners.—10,588, G. Halls, Bench-hooks and Cramps.—11,013, C. Lewin, Safety-fastenings for Window-sashes or other Sliding-sashes and Panels.—11,148, J. Freyburg and C. Driver, Ball-castors.—11,165, C. Armstrong Salt, Glazing of Sanitary Ware &c.—11,205, H. Chappell, Pressing and Moulding Plastic Materials.—11,222, G. Mason, Sash-fastener.—11,223, T. Elcoate, Sash-fastener.—11,432, R. Holdin and W. De Maine, Ordinary Door-latches.—11,440, R. and F. Hall, Movable Tiled-hearth and Fender.—11,450, C. Darrah, Enquiry or Communication Windows.—11,548, M. Mickel and C. Treupel, Scaffold-holder.—11,618, T. Lodge, Portland Cement and similar Materials, and an apparatus therefor.—11,635, J. Stephens, Door-bolts, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

13,306, G. Farini, Spring Door-hinges. — 14,739, B. Haigh, Disinfecting and Deodorising Closets, &c.—813, T. Ure, Sanitary Apparatus applicable to Water-closets, &c. —2,849, W. Wheeler, Revolving Ventilators and Chimney Cowls.—5,365, R. Jesson and Others, Brick-moulds, and the Stock and Fittings used with same.—9,165, H. Fitz-Patrick, Locks.—10,080, A. Schofer, Drying Cement, &c.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

July 17.—By *Horne, Son, & Eversfield*: 3, Stanhope-pl., Hyde-pk., u.t. 38 yrs., g.r. 21*l.*, r. 320*l.*, 3,700*l.*; 4 and 5, Stanhope-pl., u.t. 37 yrs., g.r. 33*l.*, r. 475*l.* 15s., 5,500*l.*; 1, Hyde-pk.-pl., u.t. 38 yrs., g.r. 65*l.*, r. 700*l.*, 7,500*l.*; 11, Portman-st., Portman Estate, u.t. 30 yrs., g.r. 9*l.*, r. 180*l.*, 1,975*l.*; 6, Notting-hill-ter., and 6, Ladbroke-ter.-mews, Notting-hill, f., r. 100*l.*, 2,100*l.*; 7, Notting-hill-ter., and 7, Ladbroke-ter.-mews, f., r. 130*l.*, 2,400*l.*; 8, Notting-hill-ter., and 8, Ladbroke-ter.-mews, f., r. 80*l.*, 2,420*l.*; 128 to 140 even, High-st., f., r. 1,015*l.*, 17,670*l.*; 133 to 145 odd, High-st., f., r. 875*l.*, 16,980*l.*; Melrose-gardens, Shepherd's Bush, f.g.r. of 288*l.*, with reversion in 85 yrs., 7,275*l.*; f.g.r. of 247*l.* 10s., Shepherd's Bush-rd., with reversion in 85 yrs., 6,210*l.*; f.g.r. of 252*l.*, Cromwell-grove, with reversion in 85 yrs., 6,320*l.*; f.g.r. of 108*l.*, Melrose-ter., with reversion in 85 yrs., 2,700*l.*; f.g.r. of 234*l.*, Poplar-grove, with reversion in 85 yrs., 5,860*l.*

July 20.—By *Fleuret & Sons*: Grosvenor-pk., Camberwell, a profit rental 60*l.* a year, u.t. 60 yrs., 945*l.*—By *Aldridge's*: "Clevelands" and stabling, Eldon-pk., Norwood, f., 660*l.*; 5 to 8, Garnett-rd., Thornton-heath, f., r. 57*l.* 4s., 485*l.*—By *Geo. Head & Co.*: 10 and 11, Cunningham-pl, St. John's Wood, u.t. 31¾ yrs., g.r. 16*l.*, 1,620*l.*; 10A, Cunningham-pl., u.t. 31¾ yrs., g.r. 12*l.* 1s., r. 125*l.*, 890*l.*; 34, Hamilton-ter., u.t. 44¾ yrs., g.r. 12*l.*, r. 161*l.* 8s., 1,300*l.*; 8 and 10, Hall-rd, u.t. 44¾ yrs., g.r. 6*l.* 15s., r. 130*l.*, 1,350*l.*; 22, Grove-rd., u.t. 20½ yrs., no g.r., r. 60*l.*, 450*l.*; i.g.r. of 145*l* 10s., u.t. 20½ yrs., g.r. 100*l.*, 490*l.*: I.g.r. of 385*l.*, u.t. 22¾ yrs., King William-st., City of London, g.r. 70*l.* 16s. 3d., 3,550*l.*—By *Wagstaff & Warman*: 24, Calabria-rd., Highbury, u.t. 94 yrs., g.r. 7*l.* 8s. 6d., r. 40*l.*, 400*l.*; 74, Bridport-pl., Hoxton, u.t. 40 yrs., g.r. 5*l.* 5s., r. 42*l.*, 300*l.*; 21, Kenmure-rd., Hackney, u.t. 85 yrs., g.r. 6*l.*, r. 33*l.*, 300*l.*; 31, Dean-st., Islington, u.t. 36 yrs., g.r. 5*l.*, r. 34*l.*, 230*l.*; 24, 26, and 28, King Henry's-walk, Mildmay-pk., u.t. 12 yrs., g.r. 10*l.*, r. 71*l.*, 230*l.*; 103, Clifton-st., Finsbury, u.t. 21 yrs., 270*l.*

July 21.—By *E. E. Croucher & Co.*: "South Lodge," Wandsworth-common, with grounds, f., 2,250*l.*—By *Eastman Bros.*: 129, Landcroft-rd. Dulwich, u.t. 76 yrs., g.r. 5*l.*, 255*l.*—By *Weston & Son*: 91, Dalberg-rd., Brixton, u.t. 82 yrs., g.r. 6*l.* 10s., r. 32*l.*, 240*l.*; 52, 54, 60, and 66, Mervan-rd., u.t. 82 yrs., g.r. 30*l.*, r. 142*l.*, 1,055*l.* — By *S. B. Clark & Son*: 112, Lisson-grove, Marylebone, f., 1,500*l.*—By *Field & Sons*: 33 to 36, Upper Grange-rd., Bermondsey, f. and g.r. of 15*l.* 2s., reversion in 38 yrs., 1,540*l.*; I.g.r. of 112*l.*, Holloway-rd., u.t. 30 yrs., g.r. 35*l.*, 1,250*l.*; 56, Romford-rd., Stratford, f., 600*l.*; 24, Vassall-rd., Brixton, u.t. 9 yrs., g.r. 9*l.*, r. 28*l.*, 65*l.* By *Driver & Co.*: 6, Lancaster-pl., Strand, u.t. 24 yrs., g.r. 30*l.*, r. 400*l.*, 3,000*l.*; a plot of freehold land, 1a. 3r. 0p., Lyndhurst, Hants, 1,000*l.* By *Debenham, Tewson, & Co.*: The f. residence, "Berthons," and 7a. 3r. 16p., Walthamstow, 5,000*l.*; 3 and 8, Hanover-pl., Regent's-pk., u.t. 31 yrs., g.r. 6*l.*, with reversion to rack rents in 1893, 3,040*l.* By *Worsfold & Hayward* (at Dover): Bewsbury Cross Farm, 125a. 3r, 38p., f., near Dover, 2,700*l.*; Baker's Meadow, 4a., f., 250*l.*; 50, London-rd., Buckland near Dover, f., r. 24*l.*, 370*l.*

July 22.—By *D. Young*: The residence, "Blanerne House," Balham-pk.-rd., f., 880*l.*; 39 and 41, Verona-rd., Battersea, f., r. 49*l.* 8s., 510*l.*; 22 and 30 (even), Vincent-st., Canning-town, u.t. 74 yrs., g.r. 14*l.* 7s. 6d., 350*l.*—By *Newbon & Co.*: 22 and 23, Penn-road, Camden-rd., u.t. 51 yrs., g.r. 16*l.*, r. 90*l.*, 760*l.*; 138 and 142, Camden-rd., u.t. 44 yrs., g.r. 10*l.* 8s., r. 115*l.*, 1,205*l.*; 20, Warren-st., Pentonville, u.t. 36 yrs., no g.r., r. 36*l.*, 290*l.*; 21, Theberton-st., Islington, u.t. 27 yrs., g.r. 8*l.*, r. 45*l.*, 300*l.*; 3, Grange-rd., u.t. 45 yrs., g.r. 7*l.* 10s., r. 42*l.*, 380*l.*: 40, 42, 44, and 52, Tollington-rd., Holloway, u.t. 57 yrs., g.r. 25*l.* 4s., r. 164*l.*, 1,610*l.*; 1 and 2, Bryett-rd., u.t. 57 yrs., g.r. 12*l.*, r. 62*l.*, 510*l.*: 3 and 4, Bryett-rd., u.t. 57 yrs., g.r. 12*l.*, r. 64*l.*, 515*l.*; 93, Grove-rd., u.t. 71 yrs., g.r. 7*l.*, r. 40*l.*, 300*l.*; a plot of freehold land, Victoria-rd., New Barnet, 165*l.*

July 23.—By *H. C. Newson*: 42, Hyde-pk. Gate, Kensington, u.t. 14 yrs., g.r. 458*l.*, 5,000*l.*—By *J. Hibbard*: 9, Allen-rd., Hornsey, u.t. 72 yrs., g.r. 11*l.*, 240*l.*; 59 to 65 odd, Hatcham-rd., Old Kent-rd., u.t. 58 yrs., g.r. 10*l.* 10s., 800*l.*—By *G. B. Hilliard & Son*: "Scotchman's Farm," 91a. 0r. 21p., f., Laindon, Essex, 1,070*l.*—By *W. T. Marsh*: 2, 3, and 4, Codrington Mews, Notting-hill, f., r. 90*l.*, 1,140*l.*; 21, Winchester Mews, St. John's Wood, u.t. 73 yrs., g.r. 3*l.*, r. 34*l.*, 300*l.*; 4, Braden-st., Paddington, u.t. 79 yrs., g.r. 5*l.*, r. 36*l.*, 325*l.*; 12, 14, and 16, Braden-st., u.t. 79 yrs., g.r. 15*l.*, 920*l.*; 30 and 32, Goldney-rd., Maida Vale, u.t. 72 yrs., g.r. 18*l.*, r. 102*l.*, 825*l.*—By *Farebrother, Ellis & Co.*: "The Coach and Horses," public house, f., Harrow-rd., 8,005*l.*; an enclosure of land, 30a. 2r. 35p., f. Cobham, Surrey, 2,400*l.*; "Enmill Farm," 268a. 2r. 26p., f., near Winchester, 2,000*l.*—By *Newbon & Co.*: 24, Shrubland-grove, Dalston, u.t. 50 yrs., g.r. 3*l.*, r. 30*l.*, 250*l.*; 136, Stroud Green-rd., Holloway, u.t. 76 yrs., g.r. 7*l.*, 475*l.*; 5, The Parade, Dulwich, f., r. 70*l.*, 1,000*l.*; 9, The Parade, f., r. 60*l.*, 850*l.*; 45, Half-moon-cres., Islington, u.t. 15 yrs., g.r. 6*l.* 15s., r. 26*l.* 8s., 100*l.*; 49 and 51, Half-moon-cres., u.t. 15 yrs., g.r. 6*l.* 15s., r. 34*l.*, 125*l.*; 53, 55, and 57, Half-moon-cres., u.t. 15 yrs., g.r. 6*l.* 16s., r. 82*l.* 4s., 350*l.*; 31, Barnsbury-rd., and 4 and 6, Maygood-st., u.t. 10½ yrs., g.r. 15*l.* 4s., 230*l.* By *C. C. & T. Moore*: 134, 136, 138, and 140, Burdett-rd., Mile End, f., r. 119*l.* 4s., 1,725*l.*; 1 and 2, Williams-cottages, Bow, f., r. 62*l.* 8s., 575*l.*; 39 and 41, Thomas-st., Limehouse, u.t. 72 yrs., g.r. 7*l.*, r. 52*l.*, 300*l.*; Twenty-two houses in Crownfield-rd., Stratford, u.t. 87 yrs., g.r. 88*l.*, r. 629*l.* 4s., 3,305*l.*; 194a, Crownfield-rd. and an I.g.r. of 6*l.* 10s., u.t. 88 yrs., no g.r., 220*l.*—By *D. Watney & Sons* (at Dover): 11, Snargate-st., Dover, f., r. 85*l.*, 2,060*l.*; 62 and 63, East Cliff and Fountain Cottage, f., 560*l.*

July 24.—By *Drew & Son*: "Dunstable House," f., Lower Richmond, 4,000*l.*—By *Baker & Sons*: 196 and 198, and 23 and 24, Market-row, Oxford-st., u.t. 15 yrs., g.r. 263*l.*, r. 1,200*l.*, 9,400*l.*; "Sandwell House" and 3 acres, f., West End-lane, Hampstead, 8,000*l.*; 35 and 37, Lonsdale-rd., Bayswater, u.t. 52 yrs., g.r. 15*l.*, r. 85*l.* 16s., 485*l.*—By *Geo. Gouldsmith, Son, & Co.*: Eaton-pl., Belgravia, I.g.r. of 80*l.*, u.t. 33 yrs., g.r. 10*l.*, 1,790*l.*; Eaton-pl., I.g.r. of 130*l.*, u.t. 33 yrs., g.r. 9*l.*, 2,010*l.*; Eaton-sq., I.g.r. of 60*l.*, u.t. 33 yrs., g.r. 5*l.*, 710*l.*; William-st., I.g.r. of 30*l.*, u.t. 37½ yrs., g.r. 5*l.* with reversion, 1,000*l.* —By *C. Hall*: 40, White-sq., Clapham, f., 60*l.*—By *C. & H. White*: 61 and 63, Meyrick-rd., Clapham, u.t. 57 yrs., 6*l.* 10*l.*, 395*l.*; 65, Meyrick-rd., u.t. 57 yrs., g.r. 3*l.* 10s., g.r. r. 26*l.*, 260*l.*

[Contractions used in these lists.—F.g.r. for freehold ground-rent; I.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	8/0/0	9/0/0
Teak, E.I... load	8/0/0	14/0/0
Sequoia, U.S.ft.cu.	2/3	3/0
Ash, Canada load	2/5/0	4/0/0
Birch, do.	2/5/0	4/5/0
Elm, do.	3/5/0	4/15/0
Fir, Dantsic, &c.	2/0/0	3/10/0
Oak, do.	2/10/0	4/10/0
Canada.....	4/17/6	6/10/0
Pine, Canada red	2/10/0	3/10/0
Do, yellow	2/0/0	5/0/0
Lath, D'ntsic, fath	5/0/0	6/0/0
St. Petersburg	5/0/0	7/0/0
Deals, Finland, 2nd & 1st std 100	7/15/0	10/0/0
Do, 4th & 3rd..	7/5/0	8/5/0
Do. Riga	6/5/0	7/15/0
St. Petersburg, 1st yellow ..	9/15/0	14/0/0
Do. 2nd yellow	8/5/0	9/5/0
Do. white	6/15/0	10/0/0
Swedish	6/15/0	15/10/0
White Sea	8/5/0	17/0/0
Canada, Pine 1st	12/10/0	24/0/0
Do. do. 2nd....	9/0/0	15/10/0
Do. do. 3rd, &c.	6/10/0	10/0/0
Do. Spruce. 1st	8/0/0	10/10/0
Do. do. 3rd & 2nd.....	6/0/0	7/10/0
New Brunswick	5/5/0	7/5/0
Battens, all kinds	3/10/0	15/10/0
Flooring Boards, sq., 1 in. prep. 1st	0/10/0	0/13/6
Do. 2nd.....	0/9/0	0/10/6
Other qualities	0/4/6	0/7/6
Cedar, Cuba ..ft.	¼	¼
Honduras, &c.	¼	¼
Mahogany, Cuba.	¼	⅙
St. Domingo, cargo av	¼	⅙
Mexican do. do	¼	/5
Tobasco do. do	/5	/7
Honduras do..	/5	/6½
Box, Turkey ton	4/0/0	13/0/0
Rose, Rio.....	10/0/0	20/0/0
Bahia	9/0/0	18/0/0
Satin, St. Domingo .....ft.	0/0/10	0/1/3

TIMBER (*continued*).		
Porto Rico	0/0/10	0/1/6
Walnut, Italian..	0/0/3½	0/0/7
METALS.		
Iron—Pig, in Scotland .....ton	46/6/0	47/1/0
Bar, Welsh, in London.....	6/5/0	6/15/0
Do. do. at works in Wales	5/15/0	6/5/0
Do. Staffordshire, in London	6/5/0	7/0/0
Copper—British, cake and ingot	58/10/0	59/0/0
Best selected ..	59/10/0	60/10/0
Sheets, strong..	68/0/0	0/0/0
Chili, bars	52/0/0	52/18/9
Yellow Metal lb.	0/0/6	0/0/6½
Lead — Pig, Spanish....ton	12/7/6	0/0/0
English, com. brands	12/10/0	12/12/6
Sheet, English, 3 lbs. per sq. ft. and upwards ..	14/10/0	0/0/0
Pipe	15/0/0	0/0/0
Zinc — English sheet .....ton	27/0/0	0/0/0
Vieille Montagne.....	27/10/0	0/0/0
Tin—Straits	91/5/0	91/15/0
Australian	91/7/6	92/17/6
English Ingots	0/0/0	0/0/0
OILS.		
Linseed .....ton	20/15/0	21/0/0
Cocoanut, Cochin	31/0/0	0/0/0
Do. Ceylon	27/0/0	0/0/0
Palm, Lagos	25/0/0	25/10/0
Rapeseed, English pale	30/0/0	30/5/0
Do. brown	28/15/0	0/0/0
Cottonseed ref...	20/15/0	0/0/0
Oleine	21/15/0	24/0/0
Lubricating, U.S.	5/0/0	6/0/0
Do. refined	8/0/0	12/0/0
Tar—Stockholm barrel	0/19/6	1/0/0
Archangel	0/13/0	0/0/0

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

AVONMOUTH.—For erecting police-station, Avonmouth. Messrs. Medland & Son, architects, Gloucester:—

J. Flower	£2,255	Stephens, Bastow, & Co. ..	£1,949
W. Church	1,997	J. Greenslade	1,887
Martin	1,950		

BRENTFORD.—For erection of additional stabling at Town Meadow, for the Brentford Local Board. Mr. J. H. Strachan, Surveyor:—

Chapman	£270 10 0	Barrett	£198 3 0
Emmett	242 2 0	Barnes	189 0 0
Foord & Sons .	224 0 0	Bloomer, Brentford*	177 10 0

Surveyor's estimate, £200.
* Accepted.

BRISTOL.—For erecting a Friary, Bristol. Messrs. Pugin & Pugin, architects, Westminster:—

A. H. Forse	£3,470	Stephens, Bastow, & Co. ..	£2,998
T. R. Lewis	3,390	Wilkins & Son	2,984
Brock & Son	3,168		

BRISTOL.—For erecting St. Paul's Brewery. Mr. W. Bruce Gingell, architect, Bristol:—

W. Cowlin & Son	£987	E. T. Hatherly	877
E. Love	955	E. & G. Howell	710
Stephens, Bastow, & Co.	899		

DROMORE (Ireland).—Accepted for carrying out the sanitary arrangements, exclusive of unskilled labour, at Dromore Castle, Limerick, Ireland, for the Right Hon. Earl of Limerick:—

R. P. Beattie £960

[No competition.]

GRAYS (Essex).—For the completion of school building at East Thurrock, Grays, Essex, for the Grays Thurrock School Board. Mr. Geo. Waymouth, architect, 23, Moorgate-street:—

J. Pavitt	£2,134 14 6	H. R. Rous	1,800 0 0
E. Houghton & Son	1,924 0 0	S. Grist*	1,638 0 0
H. J. Carter	1,900 0 0		

* Accepted.

LONDON.—For alterations and additions to the Hackney Workmen's Club, Haggerstone-road, E. Mr. W. Batten, architect:—

C. Payne & Sons	£5,188 14 3	Britton	£4,250 0 0
Leath & Harris	4,984 16 4	Rider & Hunt	4,146 0 0
Jas. Edwards	4,630 18 4	Inwood	3,956 0 0
Williams & Richards	4,500 0 0	Channing	3,898 0 0
Rowe Bros.	4,472 0 0	R. Edwards	3,751 0 0

LONDON.—Accepted for carrying out the sanitary arrangements at 10, Holland-villas-road, for Mr. J. Child:—

R. P. Beattie £249 12 0

[No competition.]

LONDON.—For the erection of houses, Vartry-road, Tottenham, N. Messrs. Homer & Ridler, architects, 35, Bucklersbury, E.C.:—

Gay (accepted) £1,226 0 0

LONDON.—For the erection of a new consulting-room, bath-room, and domestic offices at "Eira Cottage," Loudoun-road, St. John's-wood, for Dr. William Neale. Mr. Arthur O. Breeds, architect and surveyor, 22, Blenheim-road, St. John's-wood, N.W.:—

Myring & Co. (accepted) £353 0 0

LONDON.—For providing and fixing heating apparatus on the low pressure hot-water system for each of the schools which are now being erected on the sites in Ivydale-road, Nunhead, and Churchstreet, Stoke Newington, for the School Board for London. Mr. T. J. Bailey, Architect:—

Ivydale-road Site, Nunhead.

W. G. Cannon	£475	Rosser & Russell *	£375
John Fraser & Son	385		

Church-street Site, Stoke Newington.

C. P. Kinnell & Co. ..	£445 0 0	J. Smeaton, Son, & Co.*	£307 17 0

* Recommended by the Works Committee for acceptance.

LONDON.—For extending the existing hot-water apparatus at the Harrow-road School, Paddington, for the School Board for London. Mr. T. J. Bailey, Architect:—

G. Davis	£476	W. G. Cannon *	£385

* Recommended by the Works Committee for acceptance.

LONDON.—For rebuilding Nos. 18, 19, 20, and 21, Warwick-square, E.C. Mr. Delissa Joseph, architect, 17, Basinghall-street:—

W. F. Coney, 10, Fore-street £6,300 0 0

LONDON.—For building five warehouses on the site of the City Soap Works, Butler-street, E.C. Mr. Delissa Joseph, architect, 17, Basinghall-street:—

G., H., & A. Bywaters £11,000 0 0

LONDON.—For the erection of proposed new buildings at St. Luke's Workhouse, City-road, E.C., for the Guardians of the Holborn Union. Mr. H. Saxon Snell, architect, London:—

Leslie & Co.	£30,497	J. & M. Patrick	£29,252
Patman & Fotheringham.	30,350	A. Kellet	28,698
Scharien & Co.	29,986	J. O. Richardson*	27,478
W. J. Adcock	29,450		

* Accepted.

MANSFIELD (Notts).—For building Works and Ways Depôt, for the Mansfield Improvement Commissioners. Mr. R. Frank Vallance, architect:—

Baynes & Oakey	£1,504	J. Greenwood, Mansfield*	£1,415
S. & G. Frisby	1,425	Evans & Sutton	1,392

* Accepted.

MANSFIELD (Notts).—For building collector's office, Leeming-street, Mansfield, for the Mansfield Improvement Commissioners. Mr. R. Frank Vallance, architect:—

John Greenwood	£310 18 8	Baynes & Oakey	£240 0 0
Evans & Sutton	287 7 6	Edward Cuddy	240 0 0
S. & G. Frisby, Mansfield*	248 0 0		

* Accepted.

MANSFIELD (Notts).—For alterations to premises, West-gate, Mansfield. Mr. R. F. Vallance, architect:—

W. A. Vallance	£292	Edward Cuddy, Mansfield*	£725

* Accepted.

MANSFIELD (Notts).—For erecting two houses, Welbeck-street, Mansfield, for Mr. E. Smith:—

W. A. Vallance	£369 10	F. J. Baynes	£335 0 0
E. Cuddy	348 0	G. Butler, Mansfield*	335 0 0

* Accepted.

MINSTER (Isle of Thanet).—For new boiler-house, with independent shaft, three Cornish boilers, heating by steam, and hot-water supply, new deep well pumps, engine, &c., and other works, at the Union House, Minster, Isle of Thanet, for the Guardians of the Poor. Messrs. Adams & Son, Engineers to the Board, 41, Marshall-street, W.:—

McNeil	£3,815	Wenham & Waters	£4,759
Austen	5,192	Wise & Co.	4,700
Doughty	4,980	Rosser & Russell	4,498
Denne	4,880	J. & T. May, High Holborn*	4,400
Paramor	4,857		

* Accepted.

PRITTLEWELL (Essex).—For the erection and completion of new school buildings for boys, girls, and infants, including boundary-walls, fences, &c., in the Brewery-road, Prittlewell, near Southend-on-Sea, for the Prittlewell School Board. Mr. Walter J. Wood, architect, 1, Finsbury-circus, E.C., and Southend, Essex. Quantities by Messrs. Bushell & Crosier, 1, Finsbury-circus, E.C.:—

Baker & Wiseman	£5,131 0	Darke & Son	£4,599 0
F. C. Woodhams	4,800 0	F. Dupont	4,595 10
E. West	4,635 0	J. Gozzett, Maldon*	4,218 0

[Architect's estimate, £4,456.]

* Accepted.

ROCHDALE.—For erecting new Salvation Army "citadel," Rochdale. Mr. W. Gilbee Scott, architect and surveyor:—

E. Jarvis	£3,895 0	A. & S. Main	£3,447 10
G. H. Martin & Co.	3,659 0	S. Hipwell	3,360 0
Rowe Bros.	3 570 0	W. A. Peters & Sons	3,174 0
Thos. Berry & Son	3,560 0	Thos. Crabtree	3,020 0
R. Robinson & Son	3,464 12		

SALISBURY.—For the erection of the new church of St. Mark, Salisbury. Mr. J. Arthur Reeve, architect, 20, Victoria-street, Westminster, S.W.:—

	Doulting Stone.	Bath Stone.
H. Knight	£9,750	£9,350
Cowlin & Son	8,620	8,570
Stephens, Bastow, & Co.	7,999	—
Cornish & Gaymer	7,794	7,644
Merrick & Son	7,328	7,253
W. J. & C. S. Young	7,150	—
W. Gibson	6,995	6,895
J. S. Kimberley	6,382	6,360
W. J. Hobbs	6,354	6,279
E. Abbey	6,320	6,306
Crook & Son	6,287	—
Webb & Co.	6,150	6,019
C. S. Hayes	5,975	5,875*

* Accepted.

SHEFFIELD.—For the construction of retaining and boundary wall at Clarkehouse road, Sheffield, based on plans, specifications, and quantities, prepared by Mr. C. F. Wike, C.E., Borough Engineer:—

John Hill	£522 2 0	J. E. Nadin, Sheffield*	506 17 6
Geo. Webster	517 0 0		

* Accepted.

SHEFFIELD.—Accepted for erecting Branch Police-station, Neepsend, Sheffield, from plans, specifications, &c., prepared by Mr. C. F. Wike, C.E., Borough Engineer, Sheffield:—

Walker & Slater, Derby £1,685 0 0

SOUTHAMPTON.—For the erection of a new shop and warehouse, Anglesea-place, Southampton, for Mr. S. M. Silvermau. Mr. W. Burrough Hill, architect, 62, Above Bar, Southampton. Quantities by the architect:—

J. Crook & Sons	£2,287 10	Stevens & Co.	1,892 0
C. B. Jordan	2,190 0	Morgan, Isted, & Morgan*	1,886 0
J. H. Sanders	2,183 0		
E. Sandon	2,096 0		

* Accepted.

[All of Southampton.]

SOUTHAMPTON.—For the erection of class-rooms, lecture theatre, and chemical laboratory, at the Institute, High-street, Southampton, for the Council of the Hartley Institute. Mr. W. B. G. Bennett, Borough Surveyor, architect:—

G. B. Jordan	£1,540	Bull, Sons, & Co.	£1,375
Morgan, Isted, & Morgan	1,484	Roe & Co. (accepted)	1,285
J. Crook & Sons	1,309	H. F. Boulton, Portsmouth	1,210

SWANSEA.—For bank fittings for the London and Provincial Bank, Limited, Swansea. Messrs. J. Buckley Wilson & Glendinning Moxham, architects, Swansea:—

Thomas Watkins & Jenkins (accepted) £200 0 0

WEALDSTONE (Middlesex).—For additions, &c., to Wealdstone Schools, for the Harrow and Pinner School Board. Messrs. Roumieu & Aitchison, architects, 10, Lancaster-place, Strand, W.C. Quantities by Mr. S. Tucker, 33, Argyll-street, W.:—

Webb	£2,560 0 0	Walker	£2,330 0 0
Kearley	2,449 0 0	Gullett	2,324 18 3
Batchelor	2,400 0 0	Larter	2,154 0 0

WOLVERHAMPTON.—For the erection of new tower and copper-house, &c., at the Wolverhampton Brewery, Wolverhampton, for Messrs. C. A. Chater & Co. Mr. Arthur Kinder, architect, Suffolk House, Lawrence Pountney-hill, Cannon-street, London, E.C. Quantities by Mr. Alexander H. Kinder, 34, Clements-lane, London, E.C.:—

S. S. Willcock	£1,629 1 6
Henry Gough	1,450 0 0
Henry Lovatt	1,434 0 0
Bradney & Co.	1,420 0 0
Guest & Sons, Brettell-lane, Wolverhampton*	1,378 0 0

* Accepted.

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Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY, but those intended for the front Page should be in by TWELVE noon on WEDNESDAY.

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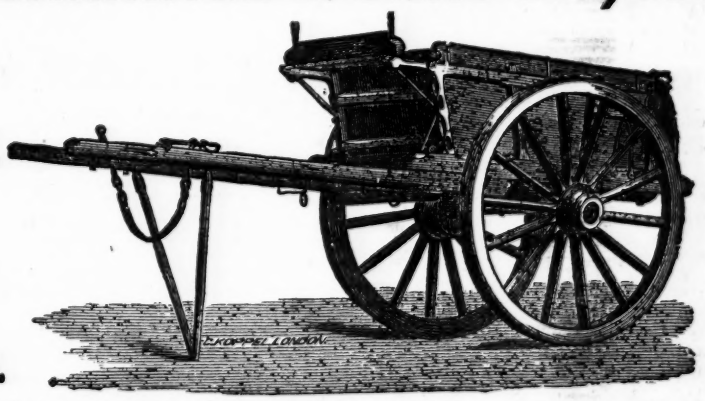

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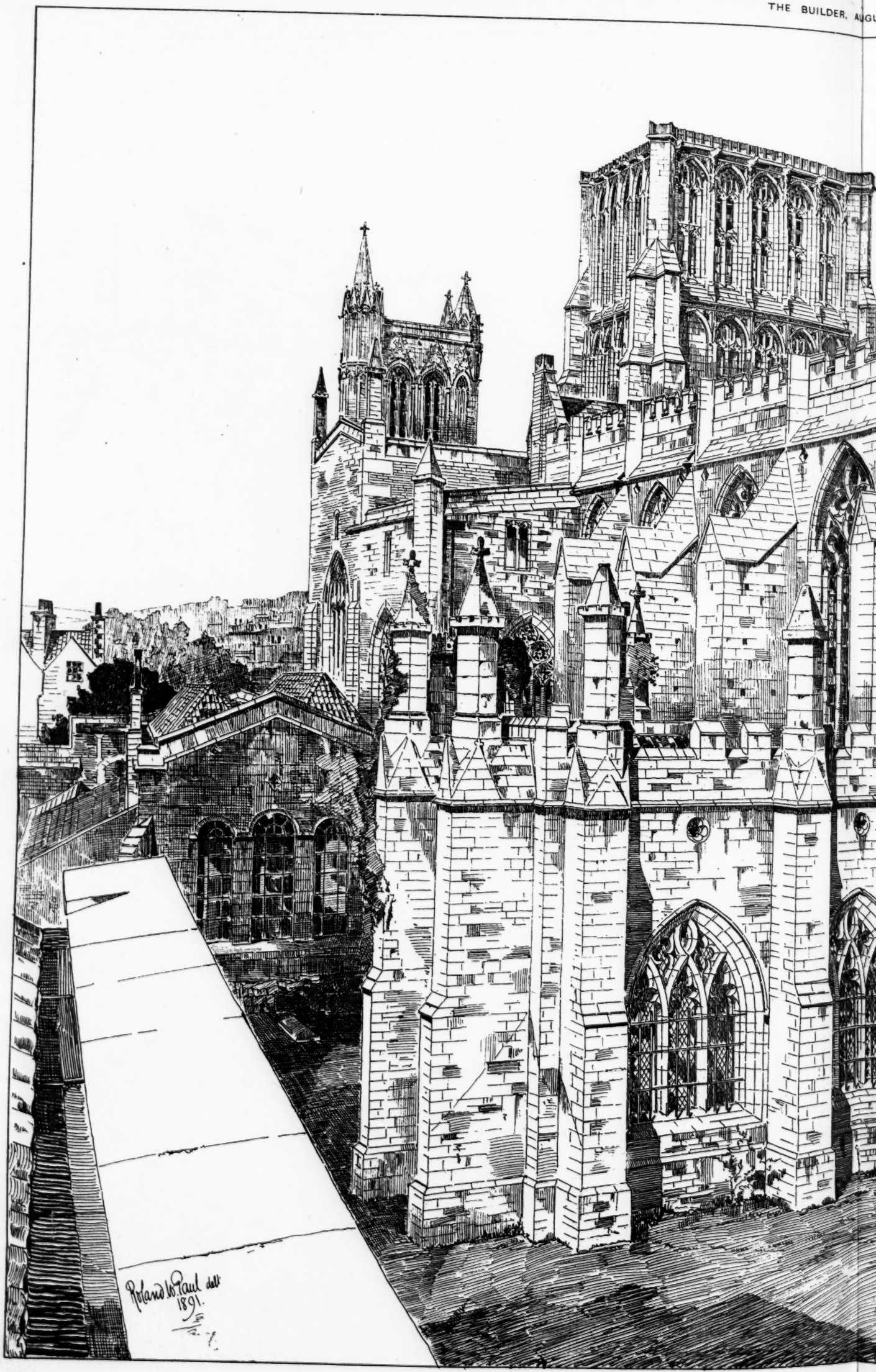

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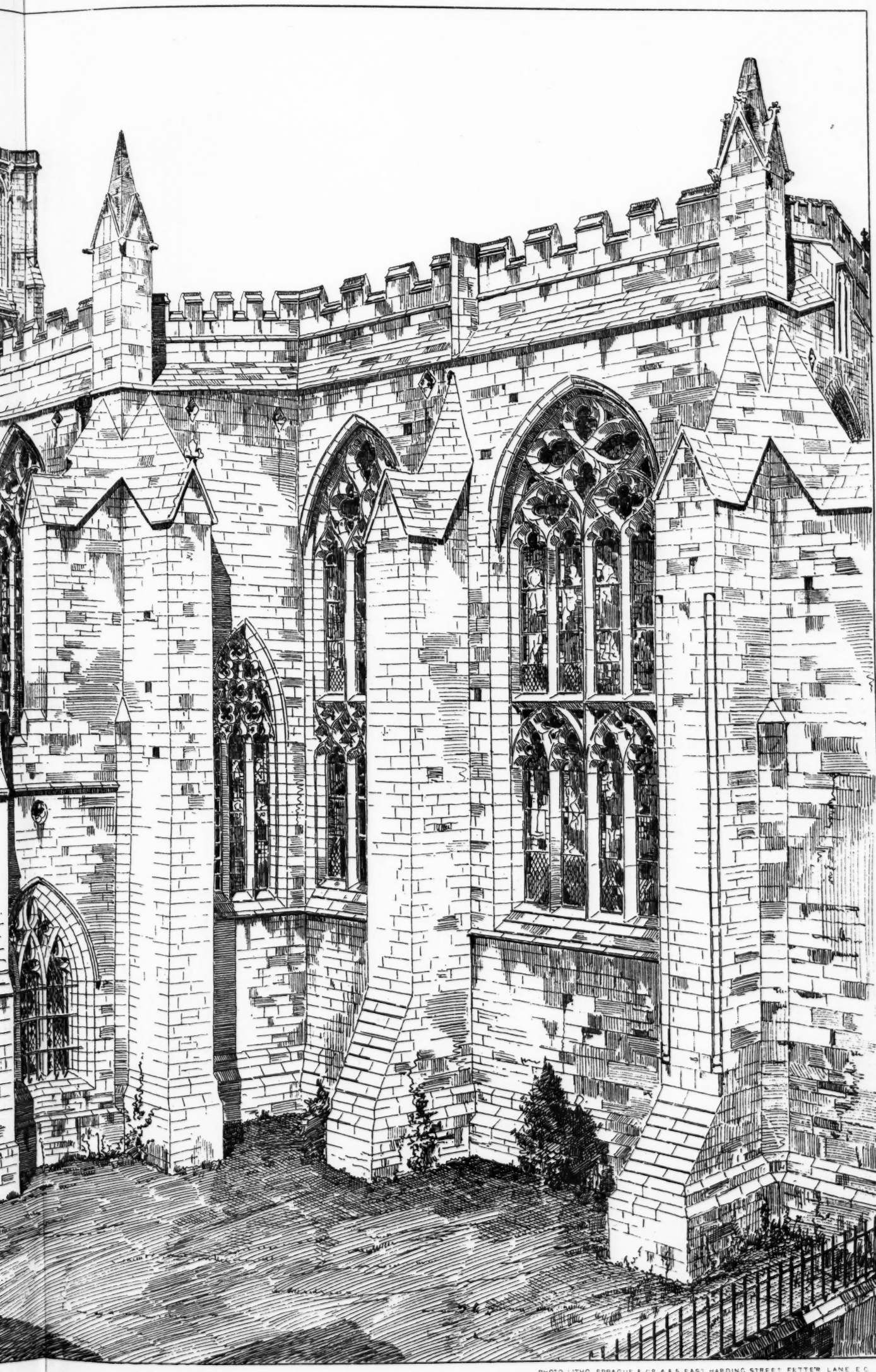

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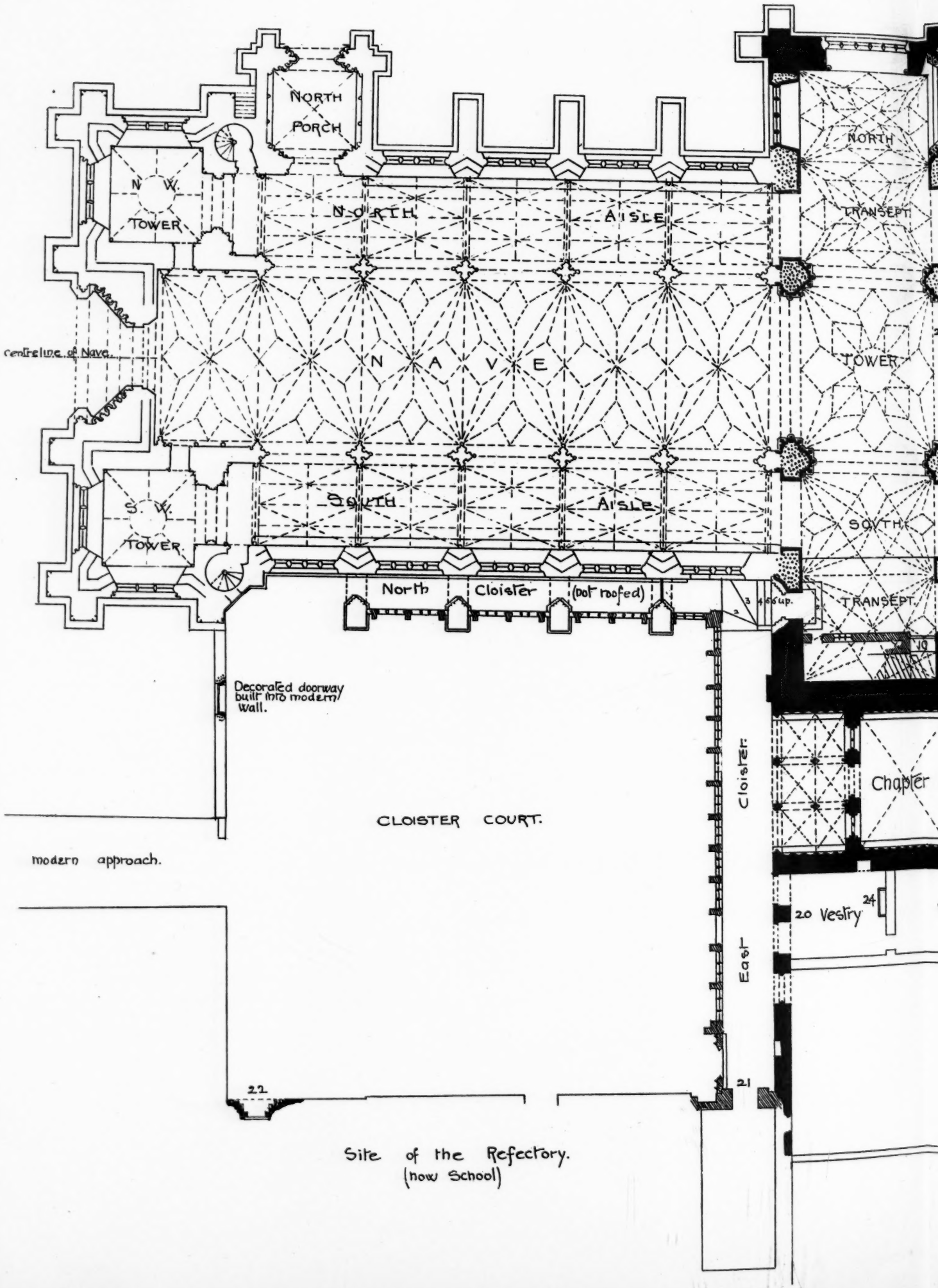

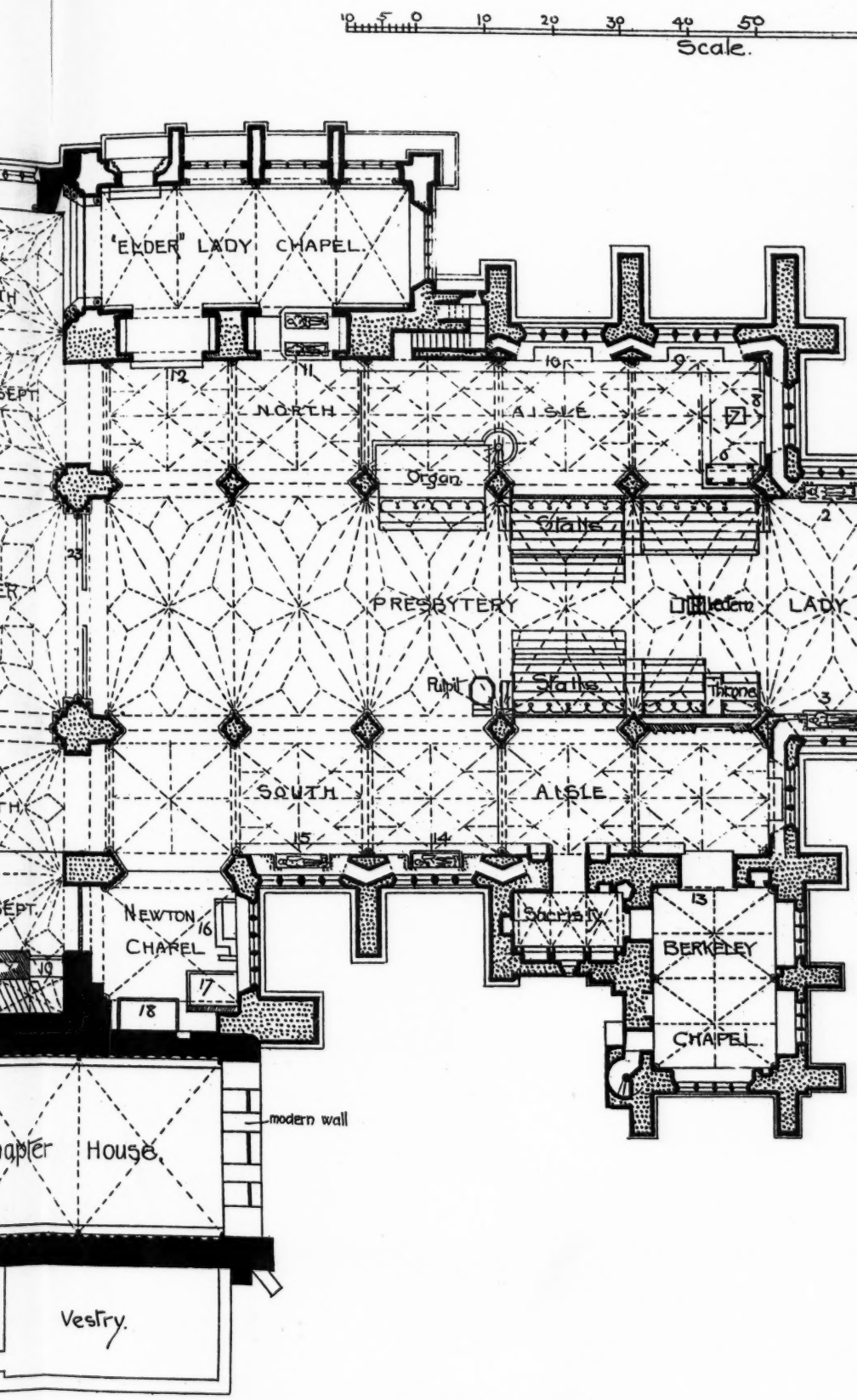

Reference.

1 Tomb Abbot Newbury. 1428
2. " " Wm Hunt. 1473
3 " " Newland. 1481.
4 Sedilia
5. Reredos.
6. Tomb Bishop Paul Bushe. 1542.
7. Mont. Mrs. Middleton. 1826
8 Remains of Reredos (Perpendicular).
9. Tomb (no effigy)
10 " " "
11 Tomb-4th Maurice, Ld Berkeley & his Mother.
12 Arched recess (no monument).
13 Berkeley Tomb. (Thos. Ld Berkeley & wife).
14 Tomb-2nd Maurice, Ld Berkeley d. 1281.
15 Tomb-Thos. Ld Berkeley d. 1243.
16 Mont. Sir Richard Newton Craddock.
17 " Sir Henry Newton. d. 1599.
18 " Sir John Newton. d. 1661.
19 Stairs to Monastery.
20 Rebus of Abbot Newland
21 Doorway to Refectory.
22. Early English doorway.
23. Modern Stone Screen.
24. Monument: Sir Chas. Vaughan, 1630.

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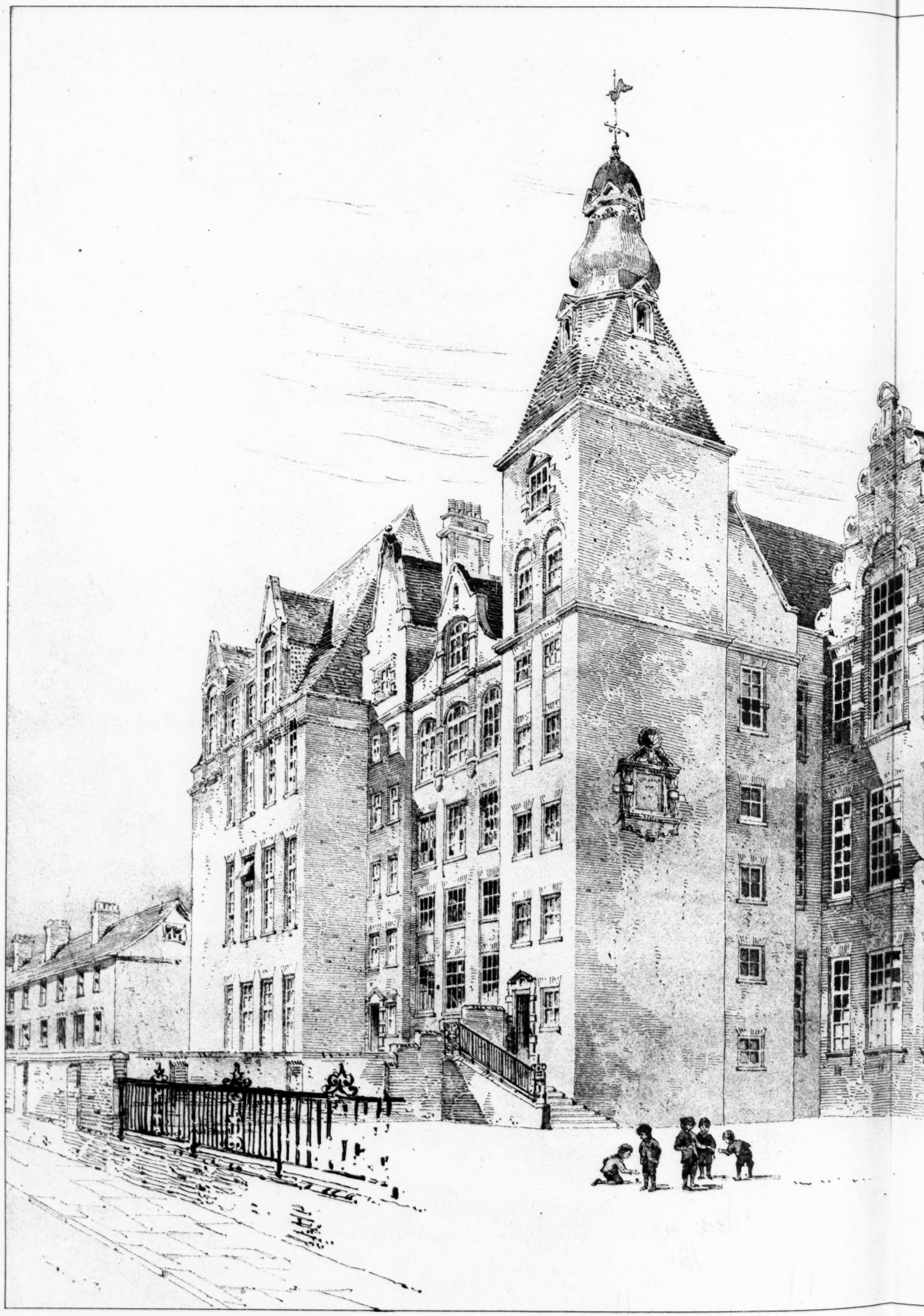

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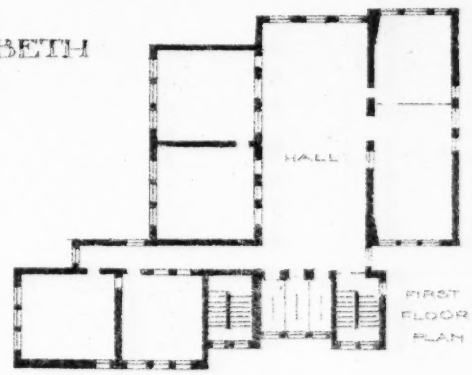

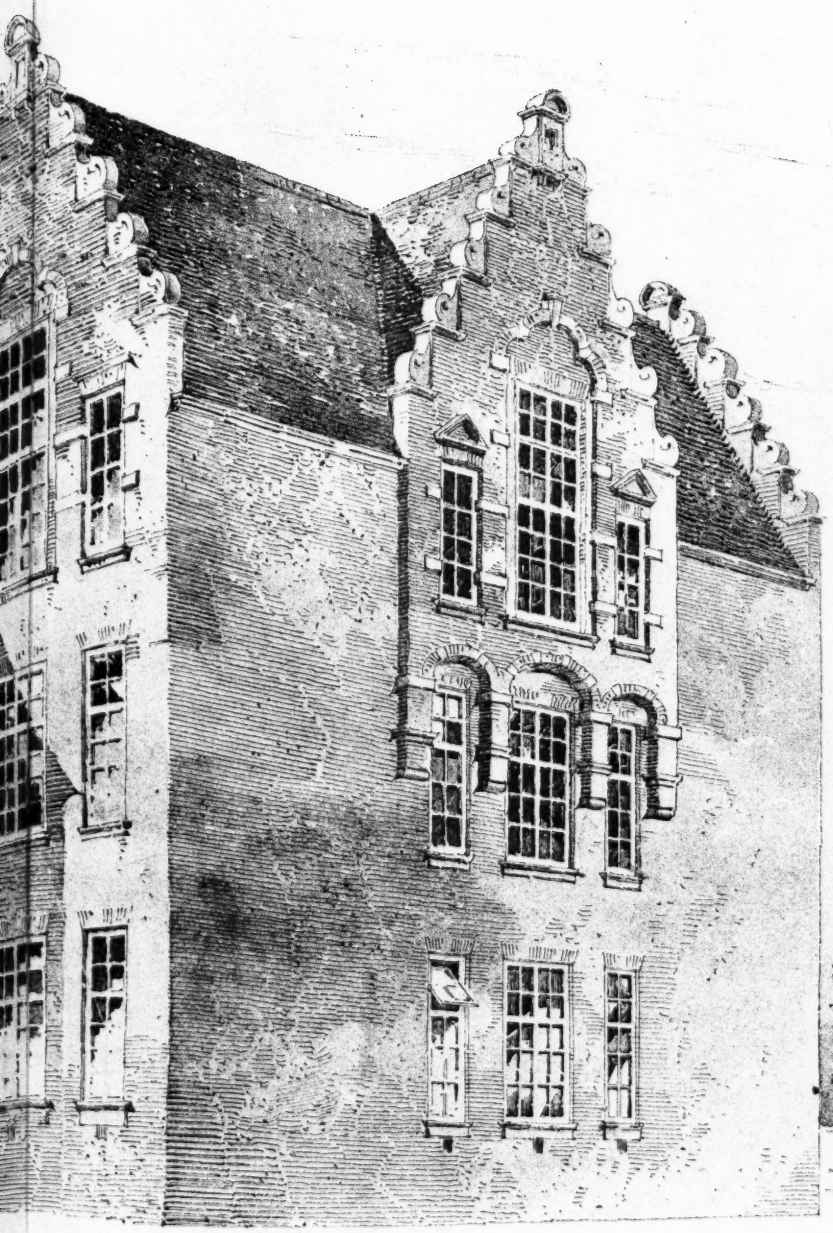

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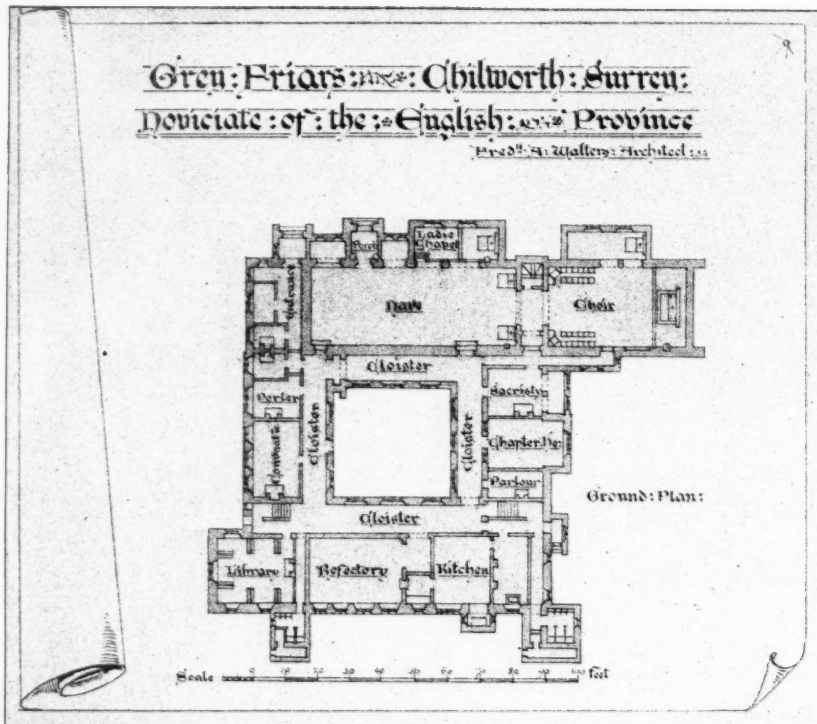

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